COMPUTERWORLD

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Demand for DPers Continues to Grow

By Jay Woodruff
CW Staff

While the prophets of recession continue to point to indications of an economic slide, job recruitment within the DP industry has shown continued growth.

Computer-related jobs, as well as high-technology jobs in general, are included in the growth trend, and both remain unaffected by the widely forecast recession, according to recruitment consultants, advertising agencies and newspapers carrying DP recruitment advertising.

"I think people are viewing this [recession] as a temporary thing. No one has decided to cut back their budgets or decrease their presence on the job market," Jo Breadwell said. She is vice-president of information services at Bernard Hodes Advertising Agency in New York City.

"We have a lot of client advertisers in electronics and high-technology areas, and we see no decrease whatsoever in the next 12 months," she added.

Ken Goldstein, an associate economist at the New York-based Conference Board, a nonprofit business and economic research organization, said that although the overall volume of recruitment advertising has been falling off over the last six months, "it's something altogether different for individual markets such as programming and technicians' jobs."

DP jobs are "an anomaly," Goldstein said, and "it's dissimilar to what is happening to everyone else." One reason for the dissimilarity may be the introduction of IBM mainframes earlier this year, he indi-

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But Managers Vigilant

Recession Sparing DP Shops

By John Whitmarsh
CW Staff

Recession? What recession?

Most DP managers who responded to a nationwide telephone survey made by *Computerworld* last week said the recession is having little or no effect on their DP operations — yet.

Even those DP managers in major industries of the recession-prone Midwest and Northeast say it's business as usual. And growth is so strong in the Sunbelt that DP shops are hanging out "Help Wanted" signs.

All of that could change, respondents cautioned, if the recession deepens in the months ahead — which many DPers expect.

Cost vigilance remains high at companies where the prices of goods and services spiral steadily higher. Pressures for salary increases are building, too. This suggests that, for the moment, DP managers are more concerned about the ravages of double-digit inflation than the effects of an economic contraction.

Among the other key findings of the survey:

- Most DP managers believe the country is in a recession, though few can find any hard evidence of it.
- Half the respondents predicted recovery by the first quarter of 1980; others forecast a protracted recession, lingering into 1981.
- No DP employees have yet been laid off because of the recession (except in Detroit — see story above right), but hiring freezes and reductions by attrition are in effect.
- Pressure from employees for cost-of-living increases is mounting, but DP managers say they are sticking to the 7% federal wage guideline. No salary increases have been postponed.
- A handful of small hardware purchases are being deferred because of the recession, but most major acquisitions and upgrades are continuing on schedule.
- Outside software purchases planned earlier in the year are being scrutinized and justified again.
- Consultants with contracts are safe. No firings reported.

This may be the most curious recession that never was, judging by the mixed response of DP managers.

"You couldn't tell there is a recession by our business," the DP manager at an East Coast specialty manufacturer reported. "Our backlog for orders is

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At Chrysler, 'It's Pretty Grim'

DETROIT — Chrysler Corp. calls it a "severe cost-containment exercise." Others call it a bloodbath.

The nation's No. 3 auto maker has laid off 27,000 hourly workers in recent weeks and 400 of its 35,000 white-collar work force since January, according to a company spokesman. Chrysler has 125,000 U.S. employees.

Data processing has taken its lumps. "We have been hit with layoffs just like every other department in the corporation," one DP manager said.

But top DP management apparently saw the writing on the wall and started to pare costs to the bone before the corporation began hemorrhaging publicly in recent weeks.

For example, overtime in DP was eliminated long ago. Salary increases have been postponed as a matter of course. Cuts among its 1,000 programmers and analysts have been continuous, and a hiring freeze is in effect. Outside

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Not Ready Anyway

System/38 Delay Relieves Users

By Tom Henkel
And Marguerite Zientara
CW Staff

IBM's decision to delay shipments of the System/38 for six to nine months has evoked a sigh of relief from users who said they wouldn't have been ready in time for the original delivery date anyway.

Twelve of 26 users surveyed last week said the delay is more a blessing than a curse because the additional wait will give them more time to prepare for what some feel may be a rocky conversion. Of the remaining 14 users, nine were unhappy with the delay and five were indifferent to it, for a dizzying variety of reasons.

On the positive side, the American Red Cross, awaiting delivery of a System/34 in October, isn't in a hurry to get its System/38. Assistant DP Director Kevin L. Jones observed that two conversions in rapid succession might be too much. Once the System/34 is installed, he added, the group will be able to wait for the 38.

Lonnie Mentz, DP manager for Hospital Medical Corp. in Littleton, Colo., is looking forward to a longer conversion period and has no doubt that his System/3 Model 15D can handle all interim processing.

He is happy for another reason as well. "I wouldn't cancel the order on a bet; I'd buy it first," he said, "because I know I could probably resell it two months later for about 130% to 140% of what I paid for it."

Also unaffected are users who had already planned interim conversions to ease into the 38. According to Larry Hurley, operations supervisor at Ecodine, Smith & Loveless in Shawnee Mission, Kan., "We thought it would be better to do the conversion with the 34 since the 38 is a new thing. This would give us better experience, and we'd know what to expect when the 38

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IBM Scissors More Price Tags

By Howard A. Karten
CW Staff

WHITE PLAINS, N.Y. — In a move that may presage a major hardware introduction, IBM recently announced price cuts on purchased 370/158 and 370/168 attached processors, some communications-oriented hardware and three line printers.

In a kind of "clearance sale," IBM has often reduced the prices of existing equipment before making product introductions. The present price cuts, following on the heels of an increase in maximum memory for the Series 30 processors [CW, Aug. 13], reflect

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Mini Steers Rescue Mission In Fastnet Race Disaster

Special to CW

PLYMOUTH, England — A minicomputer donated to determine the winners in the recent Fastnet yacht race near here wound up playing a prominent role in the rescue operation after a freak Atlantic storm brought death to 18 of the participants.

More than 25 boats were lost in the gale that lashed more than 300 craft with 70 mile-per-hour winds and 60-foot waves.

The mini, a Data General Corp. Nova 3, had been loaned to Datawest Computer Services of Plymouth to be used during the Royal Ocean Yacht Club-sponsored 605-mile Fastnet race, the final in the international Admiral's Cup series, held every four years.

When distress signals from the 20- and 50-foot yachts began coming in after the storm hit, Datawest officials worked for hours reprogramming the computer so it could aid in the rescue effort. "We had to modify a few programs so that considerably more information about the yachts could be stored and retrieved," recalled Ian Porter, managing director of Datawest.

At first, reports of sightings and casualties came in sporadically from the

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Fire Fighters in Western States Backed By DP-Managed Equipment Supply Center

By Tim Scannell
CW Staff

BOISE, Idaho — As fire fighters snuffed out the final flames of the conflagration that recently devastated 150,000 acres of woodland in seven western states, workers at a computer-managed fire equipment supply center here prepared to battle future blazes.

Having furnished some 7,000 men and women with equipment ranging from chain saws and axes to injury compensation forms in connection with that recent multistate fire, the Boise Interagency Fire Center is running a little short on supplies — especially fire-retardant shirts and pants.

The Boise fire center, basically under the jurisdiction of the Bureau of Land Management (BLM), currently uses an IBM 3741 key-to-disk data station to catalog an assortment of fire-fighting apparatus that is eventually assigned to fire fighters battling blazes in government-owned forests and range lands. "We can take a fire order and punch it in, and it will delete the inventory, flag it as to when to add items and prepare issuing and billing documents," according to Pat Barden, a fire information systems specialist at the center.

However, the recent rash of fires, which began in early July and are still burning in some spots, has taken its toll on the fire supply center.

"We're used to this sort of thing every year," Barden said, noting that forests are particularly susceptible to fires during the waning months of summer, when the weather it usually dry. "It's not routine, of course. It's a large and it's a big operation. But it just throws an additional workload on us for a period of time while the fire is going and the men are still out there."

The BLM warehouse not only supplied fire-fighting tools to the Forest Service during the recent fire, but frequently provides equipment to the National Park Service, the Bureau of Indian Affairs and the Bureau of Sport Fisheries and Wildlife. Although many of these government agencies maintain their own supply depots to cover specific areas of the country, the BLM facility can be called upon to funnel supplies to any one of the 50 states, some territories in Canada and even to Puerto Rico or the U.S. Virgin Islands.

While the Model 3741 adequately maintains all of the center's inventory on a series of floppy disks, the BLM recently installed a Honeywell, Inc. Level 6 minicomputer that will be activated sometime later this year when a few software wrinkles are ironed out, Barden said. Although the mini won't dramatically alter the way the Boise fire center conducts business, it will allow the center to access a Honeywell 66/80 mainframe at the agency's main DP center in Denver, where the BLM also has a Burroughs Corp. B5500.

Eventually, "we hope to have the capability to tie into all the regional [supply] caches," Barden said, explaining that BLM has a number of storage depots scattered across the country. "As for tying in with other agencies, of course, that's two or three years down the pike."

'Focus' on Prediction

Meanwhile, while many people at the Boise center concern themselves with maintaining the flow of supplies to fire fighters at the front lines, computer specialists here and at the U.S. Department of Agriculture's DP center in Fort Collins, Colo., are trying to predict where fires will occur and how much woodland will be destroyed.

By building data files containing the histories of selected fires, including their rate of spread and the weather conditions at the time of the blaze, fire fighters can simulate various fire patterns and actually use the computer to re-create past infernos, according to Jim Frament, a supervisor and computer specialist with the Fire Management Computer Support Staff here at Boise.

The fire planning program, called Fire Operational Characteristics Using Simulation (Focus), was developed in 1970 and taken over by the Forest Service this year. The simulations are run on the Department of Agriculture's Univac 1100/42 at Fort Collins and allows fire fighters to see what would have happend in past fires if the conditions were changed or the fire-fighting techniques changed.

In order to use this educational tool, scientists weigh different aspects of a past fire until they arrive at a fairly accurate simulation. Resources such as manpower or particular pieces of equipment are then added or subtracted until the scientists have several simulated fire-fighting battle plans.

However, the Focus system can only be used for long-range projections or for historically examining forest fires, never as a real-time, interactive, blaze-battling weapon. But such a system is on the horizon, Frament said.

Still in its programming and testing stages, the Initial Tactical Assessment Module is designed to calculate different fire growth rates and arrive at a final growth pattern for current fires.

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Ads for DPers Show No Signs of Recession

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cated.

Another reason the DP industry has not been caught by the slowdown in recruitment is that, as a service industry, it is less susceptible to cyclical variations in employment than such production-oriented industries as steel making or car manufacturing. In addition, DP remains a fast-growing part of the market and may not be subject to the slowdowns that dog less growth-oriented industries, Goldstein indicated.

In Computerworld, the position announcements section has not even shown signs of the traditional summer slump. In fact, according to John O'Leary of CW's classified advertising department, the paper is getting approximately the same amount of recruitment advertising it received in October, one of last year's busiest months.

The year 1977 was the last the paper showed a summer slump, with an average of 12.6 pages of recruitment ads per issue from the second week of May to the fourth week of August. Last year, during the same period, the paper averaged 21.5 pages an issue and increased to 26.5 pages an issue this year.

Computerworld's recruitment advertising is usually for high-level people who won't be the first hit by a recession," according the CW's manager Bill Mills, of classified advertising sales. "Companies will continue in research and development in spite of a possible cutting back in production."

CW has registered no softening in demand for DPers in any part of the country. If the recession is short-lived, continuing into the second quarter of 1980, it will not affect recruitment, Mills added.

According to one source at a major computer manufacturer, Mills said, the recession would have to last far longer than anticipated before that manufacturer would begin cutbacks. Even then, the cuts would start at the production level.

Industry 'Less Vulnerable'

Ronald Kuzoian of the Research Promotion Department at *The Boston Globe*, a regional paper with a widely read help wanted section, said the electronics industry would be "a little less vulnerable" in a recession now than it was in the recession of 1973 and 1974.

"There seems to be a great demand for products. As long as the demand stays high, the demand for more people will stay high," he stated.

Overall employment advertising in the *Globe* is up 17% for July 1979, compared with July 1978. Professional recruitment is up 19% for the same time period, but no breakdown was available for DP jobs.

At the *Chicago Tribune*, overall recruitment advertising is up, and more DP ads have been placed than last year. However, there are no "hard" figures on the percentage of increase, according to Dick Morrison, the paper's recruitment advertising manager.

The *Los Angeles Times* tells a similar story, registering a 6.02% increase in the total number of help wanted ads and a 15.67% increase in the number of lines of ads run for the first seven months of this year, compared with the same time period last year.

DP-related recruitment ads are still being placed at a high rate at the *Times*, but no breakdown of DP job ads was available.

Ohio-based Nationwide Advertising Service, Inc. has been placing more DP recruitment ads than usual. "I don't see anything happening to the demand within the next year," Nationwide's Judy Brown said from the company's Baltimore office. Her clients are getting ready for "big pushes in September."

Activity to Continue

Jim Peacock, vice-president in charge of publications at International Data Corp. in Waltham, Mass., said there may be "pockets of problems" in the computer industry, but he did not see major problems occurring as a result of a recession. Since most DP operations are built on long-range plans, "they don't just stop it for a few months because of the recession."

Similarly, none of the placement firms specializing in finding jobs for DP personnel that CW contacted saw a cutback in DP recruitment.

"We're getting signals from employment management people across the computer industry that the activity will continue," according to Bob Kleven, a member of Boston's Norton-Kleven and Co., Inc.

Scientific programming and software development requirements are "stronger than in the past," Lorry Clavelli of Dan Wallach Associates, Inc. of Rockville, Md., said.

Even if there is a recession, the DP field will suffer less than most other fields, according to Howard Levin, director of RSVP Services, Inc. of Cherry Hill, N.J. RSVP has not noticed a drop in demand for DPers.

"We're looking for it; we read the papers, too, and the papers tell us we're in a recession. It could be that the computer field is in such a growth situation that we might withstand the recession," Levin said.

IBM Reduces More Prices

(Continued from Page 1)

"normal business moves," a spokesman said.

The company dropped the purchase price of a Model 158 attached processor configuration from $380,000 to $285,000. The price of a Model 168 attached processor was reduced from $1,078,000 to $808,500.

The prices of some features on the 3704 and 3705 communications controllers were also reduced, although the cost of the units remain unchanged.

Prices on the 3271 data control units, which had ranged from $4,735 to $6,945 fell to $3,315 to $4,865. The 3272 Model 1 dropped to $3,830 from $4,565, while the 3272 Model II dropped to $4,180, down from $5,970.

The Model 3275 CRT station, which had ranged in price from $4,005 to $6,440, was lowered to range from $2,805 to $4,510. The Model 3277 CRT station — almost a common fixture in many installations — dropped to $1,730 from $2,470 for the Model I and from $3,200 to $2,240 on the Model II.

The price of the 3288-II printer was cut more than 30% from $10,625 to $7,440. The Model 3286 printer now costs $3,835 instead of $5,475, while the 3284 costs $2,850 rather than $4,070.

Why the price cuts? "Obviously, one thing is clear: [IBM is] trying to stimulate outright sales . . . it is testing the elasticity of the market," according to Tom Crotty, vice-president of the Gartner Group in New York. That company watches IBM on Wall Street.

Another possibility, raised by William Becklean of Bache, Halsey Stuart Shields in Boston, is that the firm is preparing to announce equipment in the communications area. "Many of the products mentioned are older products, so IBM may be trying to stimulate purchase of that hardware — it probably wants to do anything it can to stimulate sales in the third and fourth quarters," Becklean said.

He cautioned, however, that the 3275 and 3277 price cuts do not necessarily signal a new product in that area because they are older devices and the firm may simply wish to induce rental customers to buy.

Yet another possibility is that IBM may bring out a new member of the 30 Series. In recent weeks, IBM observers have been discussing a product — believed to be code-named "Newport" — that would be a somewhat slower version of the 3033 at a reduced price.

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ITT, RCA, Graphnet Assail International Mailgram Plan

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — International Mailgram (IMG) service, which promises to cut costs substantially for many data communications users, has run into formidable opposition.

ITT, RCA Corp. and Graphnet Systems, Inc. have asked the Federal Communication Commission (FCC) to bar the start-up of the service, essentially because they don't like the interconnection agreement worked out between the IMG carrier — Western Union International (WUI) — and Western Union.

But underlying this objection is another, as Graphnet pointed out: "Western Union is the only carrier with which the U.S. Postal Service has . . . a contractual relationship for the physical delivery of messages transmitted electronically." In other words, the telegraph company has exclusive access to a nationwide system for delivering electronic mail that can't easily be duplicated by competitors. All three of the objecting carriers want this arrangement changed.

Each of the opponents expressed unhappiness with a contract provision that gives Western Union an exclusive franchise to deliver most inbound international Mailgrams to the recipient's post office. They'd like the Postal Service to accept Mailgrams — domestic as well as international — from other carriers as well.

Difference in Cost

Last May, when WUI asked the FCC for authority to offer the new service, the company proposed to transmit a 50-word, computer-originated international Mailgram to Europe, Latin America or the Far East for $3.50. Telex-originated international Mailgrams would cost $4 each, and those input by telephone or over the counter would cost $5.25 apiece.

By comparison, present rates for similar letter telegrams to the same overseas points range in cost from $7.30 to $9.35; full-rate telegrams cost $14.60 to $18.70.

The company said it has firm agreements with nine countries to provide IMG service — Argentina, Chile, Ecuador, Guatemala, Netherlands Antilles, Phillipines, Taiwan, Singapore and Thailand. Written expressions of interest have been received from the UK, Venezuela, Jamaica, West Germany, Colombia and Belgium.

However, according to the objections filed by ITT, RCA and Graphnet, Western Union and the Postal Service will have a say in this service. Under the agreement it signed with the telegraph company, WUI cannot take any action "likely to have an adverse effect upon the programs" of the Postal Service.

Furthermore, both Western Union and the Postal Service must approve beforehand all WUI advertising of the service, and facsimile cannot be used to transmit international Mailgrams.

The latter restriction apparently is intended to protect Intelpost, the facsimile-based electronic message service which the Postal Service is planning to offer between the U.S. and seven other countries.

The Postal Service is still planning to market Intelcom, according to a spokesman for the agency, despite an FCC decision earlier this month which declared that the Postal Service must get prior approval from the commission for any electronic mail offering [CW, Aug. 6]. Contracts for Intelpost circuits have been awarded to two international carriers — RCA and TRT Telecommunications Corp. — but each carrier will have to change its existing tariff before the facilities can be provided.

An FCC spokesman said commission action on both of these matters — WUI's IMG application and the RCA-TRT tariff changes — is likely next month.

Mailgram, Telex Hikes Asked

WASHINGTON, D.C. — Western Union has requested authority to charge higher rates for its domestic Mailgram and Telex services. The new charges will become effective Nov. 12 unless the Federal Communications Commission rejects or delays them.

Computer-originated Mailgram messages would cost $1 for the first 300 characters and 23 cents for each additional 300 characters. The present rates are $1 for the first 600 characters and 45 cents for each additional 600.

For Mailgrams generated from magnetic tape, rates will be restructured the same way: The initial increment rate, $1.15, will pay for 300 characters rather than the present 600, while each additional 300-character increment will cost 23 cents instead of the present 45 cents for 600 characters.

Raised 20 Cents

The rates for Telex-originated Mailgrams will be raised from $1.05 to $1.25.

Service charges for computer-originated Telex (TCS-MS) telegram messages (Tel[t]ex services) will be increased as follows: for a TCS-MS single fast message, from $2 to $2.25; for a TCS-MS single overnight message, from $1 to $1.50; for a Tel(t)ex single message, from $3 to $4; for a TCS-MS and Tel(t)ex physical delivery charge message, from $3 to $3.50.

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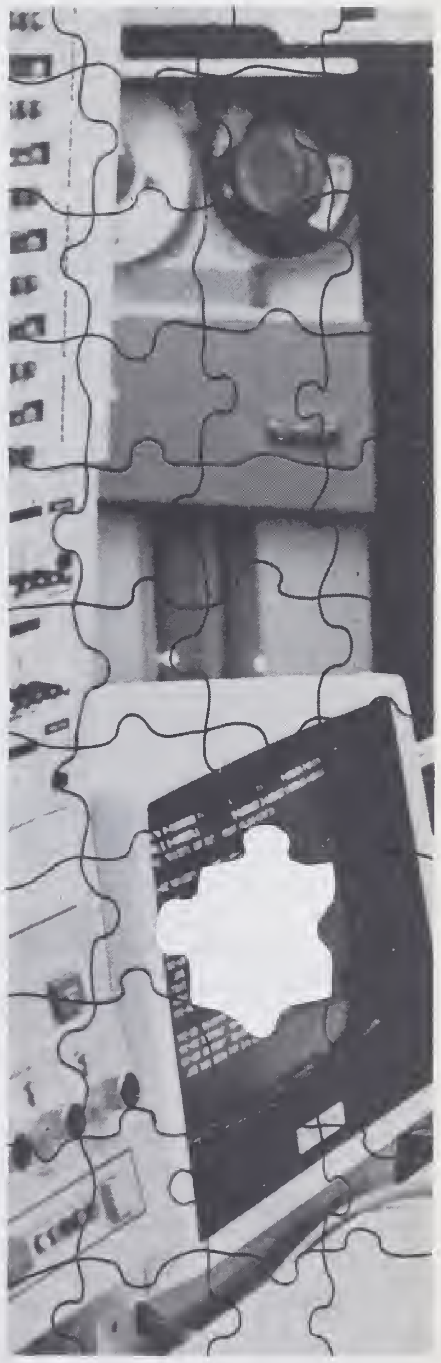

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Delay of System/38 Brings Sighs of Relief

(Continued from Page 1)

came in."

While most users feel they now have more time to make their conversions, one pleased company apparently has fate eating out of its hand. Welby Clock Co. in Chicago has Memorex Corp. disk drives on a contract that expires in November 1980. "I couldn't get out of my contract when I found I was getting the 38 in May 1980, but now I'm getting it in December 1980, so the delay will actually help me," remarked Joseph F. Liston, chief financial officer at the firm.

Last Straw

Lloyd Phillips, DP manager for Confederated Tribes, a lumber consortium on Oregon's Warm Springs Indian Reservation, is also happy about the delay — but for other reasons. The delay may have proved the last straw for the confederation's patience with IBM.

"We were trying to hold on, thinking IBM was going to get its act together, but it appears it tried to get it together a little too soon," he said.

"IBMers I've talked with said the problem was that the batch part of [the system] just dies. Being a System/3 Model 12 shop, we're running [the Communications Control Program] now, but we have a number of batch jobs and we can't afford to have them go down.

"I'm not sure I want to be a pioneer for the System/38," he added.

Confederated Tribes is leaning toward a Hewlett-Packard Co. HP 3000. Phillips said converting to an HP system will be easier than going from a System/3 to System/38. The HP system will cost about $800 a month less to lease.

"Even if [IBM] could deliver the system when we want it, we're having some real second thoughts on it. I went to a couple of IBM classes on the 38 and they seemed a little vague. [IBM] admits it doesn't have all the answers. I see now it definitely doesn't," Phillips remarked.

In a Bind

Users who more urgently need the System/38 technology, said they are in a definite bind. Firmly committed to IBM technology, some companies have few alternatives. They can upgrade their current System/3 mainframes to the more powerful Model 15D, switch to the System/34 for interim computing power or make do with what they've got until the System/38 arrives.

Leery of the delayed delivery date — which will force firms to wait up to two years for their machines — some users have decided to order IBM 4300 series mainframes in place of the System/38. Those users said the only difference between the two mainframes is the operating system — the System/38 runs under OS, while the 4300 series runs under DOS.

But even going to the 4300 series has its problems, some users have found. "We contacted IBM on the 4300 series, and it couldn't even get back to us to talk about an order, let alone a delivery," one DP manager said. "The current production rate [on the 4300 series] doesn't even come close to making a delivery reasonable. I think we're talking four years."

Other users protected their options a little more carefully. At least four users surveyed had ordered both System/38 and 4300 series mainframes. Because of IBM's delay on the System/38, these users are switching to the 4300 series.

The Seattle data center of Foss Launch & Tug Co., a water transportation firm, decided four days before IBM's announcement of the delay that the System/38 wouldn't meet the company's computing needs. "It was the first time hindsight was to our benefit," according to DP manager Clark Brown. The firm had ordered a 4331 early enough to get an October 1979 delivery date.

Foss Launch is still debating whether to take the 4331 or switch to an HP 3000-III mainframe.

No Definite Dates

While all users have been notified of a six- to nine-month delay, none have been given a definite delivery date. That is causing problems for users who made plans contingent on the arrival of the System 38.

Computer Optics of Bethel, Conn., had the world on a string until the announcement came. "We had set our leases to expire on the anticipated delivery date," explained Rick Martin, DP manager. "They still all expire then. I could have negotiated much better leases had I known the actual delivery date."

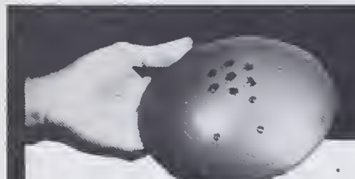
In a number of cases, the user's future hinges on the unknown delivery date. "If we get a date no later than the first quarter of 1981, we'll go straight to the 38," according to Jim Sterling, assistant DP manager at St. Joseph Memorial Hospital in Kokomo, Ind.

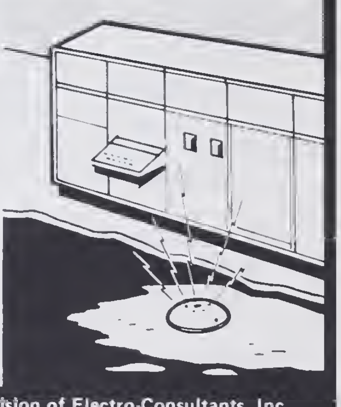
"If the date is later than that, we'll probably go to a System/3 Model 15 in the interim" added Sterling, who currently uses a System/3 Model 12.

First Financial Management Corp. of Denver estimates the delay will cost it $50,000 because it must go to an interim System/34 by the first quarter of 1980 for one of its subsidiaries. "One of our subsidiaries is using oddball equipment from [the former] Varian Data Machines, on which the maintenance is getting very bad," Donald Marshall, vice-president of systems, said. "They'll have to hold out that much longer."

Another user, however, concluded he would "just as soon have a 12-month delay as a six-month delay." As soon as John Dorsey, DP manager of the Tog Shop in Americus, Ga., heard of the delay, he arranged to upgrade his leased System/3 Model 10 to a purchased Model 12 as an interim measure.

While Dorsey's short-term costs will go up about $12,000 in the next six months because of the purchase, "the 38 delivery date doesn't matter that much to us anymore," he said.





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Fastnet Rescue Aided by Mini

(Continued from Page 1)

yachts and Royal Navy boats and helicopters, which had been dispatched to the scene. From this information the minicomputer, which can store up to 64,000 characters of information in main memory, began to make lists of the whereabouts and condition of the sighted boats for rescue and race officials.

As the operation became more organized and information about more yachts came in from rescue ships and planes, the mini continually updated these listings and, in fact, became the central source of information.

This information was primarily used by race officials to answer questions about the safety of the sailors, but it also helped the Royal Navy cross-reference the location of yachts that had been sighted. In some instances, the information provided an idea of where missing yachts might be.

Among the yachtsmen who competed and survived the storm were former British Prime Minister Edward Heath and the race's eventual winner, Ted Turner, the American who skippered Courageous to the America's Cup crown in 1977.

Stereo Retailer High on Waiting List

Want a System/38? User Offering One for Sale

By Tom Henkel
CW Staff

DENVER — If you'd like to speed the delivery of your IBM System/38 mainframe, there may be a way to do it.

Boasting of being in the first 100 on the System/38 waiting list, Pearse Electronics, a stereo retailer here, is willing to sell its system — about a year before the revised delivery date.

Anticipating a recession, Pearse decided it really doesn't need a new system. Its present System/34 will be good enough to last a few more years, a spokesman said.

Instead of canceling the order, Pearse is trying to turn a profit from its advantageous position on the System/38 waiting list. The firm plans to buy the system from IBM and immediately sell it to a third-party buyer, which it hopes will be willing to pay a little extra for earlier delivery.

In an Aug. 16 advertisement in the *Wall Street Journal*, Pearse promised December 1979 delivery of a System/38, a 650 line/min printer, up to eight CRT terminals and 12 workstation printers.

Pearse Electronics DP Manager Connie Smith said the ad was placed before IBM's announcement of a six- to nine-month delay in delivery. However, she added quickly, even with the delay, Pearse should be one of the first to receive its System/38. A revised delivery date is not yet available.

Within hours, Smith received "six or seven" telephone inquiries — mostly from users with later positions on the waiting list. "Most of them want to see what our final ship date will be deferred to. We haven't done anything definite yet; we're going to get back with them," Smith said.

Smith declined to say how much Pearse is asking for the system. She only noted the price would vary depending on the configurations the third-party user needed.

An IBM spokesman said it isn't policy to swap positions on the System/38 waiting list. However, since Pearse is buying the system and then selling it, IBM doesn't object to the deal.

Pearse didn't buy the System/38 with the idea of turning a profit. "We bought it for our own use and decided we didn't need anything that large now. We decided we're going to sit back and watch the economy for a while. We haven't felt a lack of business, but a lot of people have," Smith said.

The stereo company decided to ride out the recession by upgrading its System/34 with more memory, according to Smith.

Tennessee DPers Lose Appeal In Taxation Fight

By Marguerite Zientara
CW Staff

CINCINNATI — DPers lost the latest round in their fight against software taxation in the State of Tennessee as the U.S. court of appeals here found the issue "so unsubstantial as not to need further argument."

In its ruling, the court noted that an "aggrieved Tennessee taxpayer" has the legal remedy of paying a tax under protest and then suing for recovery of the payment "as having been wrongfully collected."

Since 1976, Tennessee has been the battleground in a legislative and judicial struggle that has seen the state seesaw from one definition to another of "tangible, personal property." The first ruling in the matter came in 1976 when in the case of Commerce Union Bank vs. George M. Tidwell, the Tennessee Supreme Court declared computer software intangible and therefore not taxable.

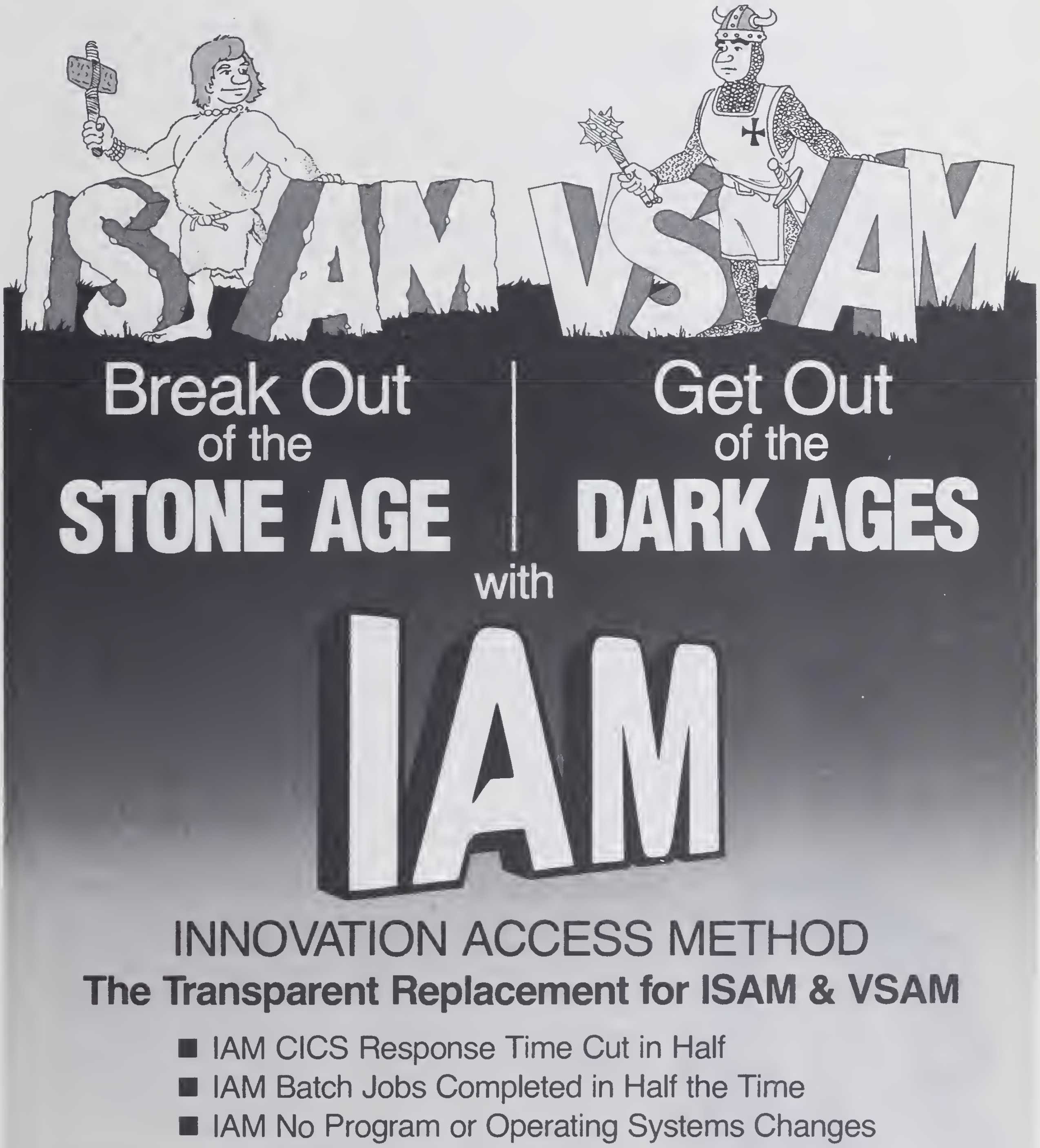
The next year, however, Gov. Ray Blanton signed into law S.B. 224, which included software in the category of tangible, personal property and made it subject to the state's 5% sales and use tax effective July 1, 1977.

In March of 1978, H.B. 2026 was passed, deleting software from the category of "tangible, personal property" but relocating it under the heading of a "sale," with the result that the tax remained.

The redefinition of software as a sale was the result of a last-minute substitution to a bill that would have exempted all software as intangible, personal property.

The latest ruling came in response to an appeal filed last year by Robert M. Sherin, president of Nova Computing Services, Inc. of Miami, Fla., and nonjudicial legislative adviser to the Data Processing Management Association, a group that has lobbied vigorously on the issue.

Sherin called the ruling "a great disappointment" and filed a petition for rehearing. In the petition, Sherin argued that "for those of us who have fought retroactive imposition of these taxes . . . in the face of the destruction of our businesses, the interpretation of whether software is tangible or intangible is all important; and not, as this . . . court has inferred, unimportant."



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Recession Seen Calling for More, Not Less Data

By John Whitmarsh
CW Staff

"When times are hard, management needs more numbers, not less," says Bill Robinson, director of information services at Goodyear Tire & Rubber Co. in Akron, Ohio.

Times *are* hard for major automotive suppliers, and the call from the executive suite is for more decision-making information from data processing.

"More than ever the company is turning to DP to help solve their problems. So the demands on us for information — numbers — are at a peak these days," Robinson said.

Robinson has responded in two ways. First, he swapped three IBM 370/168s for three IBM 3033s. To be completed next month, the upgrade will deliver a 65% increase in raw CPU power and a 45% to 70% increase in computing power at less cost.

Second, Robinson chose not to expand his 450-person DP staff. Instead he opted for IBM's Time Sharing Option (TSO). TSO is designed to offset the need for additional programming manpower with boosts in productivity through on-line programming.

Results? "In the first three months, we believe we are seeing a 20% increase in programmer productivity. After sufficient experience, we expect it to be higher than 20%," Robinson said.

Much of the new capacity goes to churn out volumes of critical information for management. In addition, Goodyear computers help maximize production of giant earth-mover tires by closely monitoring steam pressures and curing times.

"It's a scheduling job," Robinson explained. "If we can produce more tires from the same equipment, then we avoid building more pot healers and save capital investment costs."

At Chemical Bank in New York, efforts to increase programmer productivity have little to do with recession or inflation, according to Jack Hancock, vice-president and head of information services group.

"It is simply that, overall, the most expensive element of any DP operation today is people, whether we are in inflationary times or recessionary times," Hancock said.

The percentage of the DP budget allocated to the 600-person department had been on the rise at Chemical. Hancock figured the only way to give equal or better service to end users was to increase the productivity of programmers and analysts.

"This year we implemented structured technology, structured design and increased TSO. Our programming shop is now all on-line testing and that has given us a productivity increase of 15% to 18%," Hancock said.

"What would have taken us 100 programmers before we started the program now takes 85."

Chemical's hardware includes one IBM 3032, two IBM 3033s, one IBM 370/158 and an assortment of minicomputers. The 3032 is dedicated exclusively to program testing.

"Our encore will be in improved methods of systems design and responding to the user more rapidly," Hancock said.

Managers Say Recession Sparing Shops

(Continued from Page 1)

twice what we can ship."

Others believe the economy is verging on a slowdown but can find no evidence of it, making present and future actions doubly hard to plan.

"I believe we are heading for a recession even though our records have not shown so at this point," said Ken Schlosser, director of management information systems for MacDermid Inc., a speciality chemical manufacturer in Waterbury, Conn. Schlosser's DP operations are continuing normally, but he has formulated a contingency plan in case of a sharp downturn.

First, he would cut back on overtime, figuring that the company's bonus plan would blunt the financial impact of such a move on employees' salaries. Second, he would reduce paper consumption.

About 85% of his DP budget is already allocated and spent, Schlosser said, and paper and overtime are the only variables he has.

"I hear rumors of a recession, but I can't see it yet," the DP manager at another East Coast chemical company added. Nevertheless, the economy figured in his decision to defer the purchase of an IBM System/3.

A hiring freeze is in effect at the plant, the DP manager said. Staff cuts have not been announced, "Although we may take action after we receive first-quarter sales forecasts."

Even then, he observed, the DP department weathered two or three previous recessions without ever firing an employee.

'Regional Recession'

Don Thompson, director of the Information System Center at Allegheny Ludlum Industries in Pittsburgh, characterized the recession as spotty.

"It's a regional recession," Thompson said. "It is not as severe here as in other places, but we are down somewhat."

The recession has had a "negligible" effect on his $6 million DP budget, although Thomson said he is reviewing his consultants more closely, but not firing them.

Thomson, who expects the recession to deepen before an upturn in the first quarter of 1980, thinks inflation is a worse evil. "Double-digit inflation is having more of an impact on our department than recession," he said. "Services are inflating very fast and, because we follow the federal 7% wage guideline, it is very difficult to keep our people up financially."

No Measurable Effect

The economy has had no measureable effect on DP operations at City National Bank of Detroit, but Senior Vice-President Mel Bayer has stepped up his search for maintenance on his IBM 370/148.

Operations at the 600-person DP department at Chemical Bank in New York are proceeding as scheduled. "We have continued with our automation plans at the same level that we planned in the beginning of the year," according to Jack Hancock, vice-president and head of the Infromation Services Group.

Banks that are so heavily dependent on automation and DP must keep up the pace of investment, says Hancock, who two weeks ago added an IBM 3033 to his IBM 3032 and IBM 370/148.

Feeling the Pinch

Not all companies are riding out the recession so handily. Suppliers to the construction industry are feeling the pinch, for example.

AFG Industries of Kingsport, Tenn., is a flat glass manufacturer and supplier to building contractors. "The prediction is that the building trades will slow through 1980, so we could possibly see a nosedive and not come out of it until the last quarter of 1980 or the first quarter of 1981," Jim Durnin, manager of operations, said.

Durnin oversees a 28-person DP department plus an IBM 370/145. An IBM 4300 is on order.

"If the recession goes deeper than I expect, it could slow down any major equipment purchases," Durnin said. "And if things get bad next year, we could cancel our order for the 4300."

Chrysler DPer Says 'It's Grim'

(Continued from Page 1)

software purchases must be top priority to receive consideration.

"It's pretty grim," one insider reported, "but there are still things we can do." One thing Chrysler apparently has done is renegotiate the contracts on about 2,000 terminals for an annual savings of $360,000.

Cutbacks can only go so far: "We must still protect the integrity of the system, and there are instances where we must spend money to do that. Incidents have arisen which drove home the need to continue to respect the integrity of the system."

Weighing Purchases

So Chrysler continues to weigh hardware purchases — not as odd as it might sound from a company that is on the ropes.

"We have to spend it to save it if we are to meet those cost containment goals imposed by management," explained one DPer, who also sees a silver lining of sorts in the cloud.

"I think we can be much better 12 months from now than today, notwithstanding our cost containment. I think we will change our priorities and improve this evolutionary development of good systems and possibly limit our horizons to do a better job."

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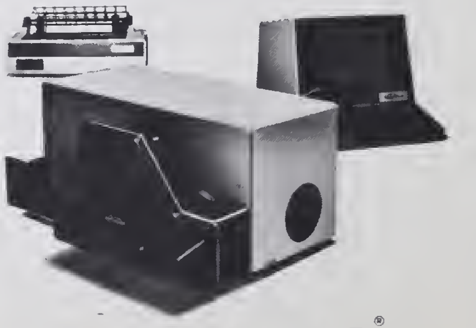

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Communications System for Nafec

FAA Spends $5 Million for Air Traffic Control

By Marguerite Zientara
CW Staff

ATLANTIC CITY, N.J. — The Federal Aviation Administration (FAA) has purchased a $5.35 million communications system for its National Aviation Facilities Experimental Center (Nafec) here in an effort to increase its research capabilities in the field of air traffic control (ATC).

The system will play a central role in Nafec's work of analyzing and solving air traffic problems all over the U.S., as well as in developing and testing new techniques, procedures and automated equipment designed to "increase the safety and efficiency of U.S. air control," according to a Nafec spokesman.

Typical of Nafec's work was a study of the air traffic to be handled by the Dallas-Fort Worth Regional Airport done during the airport's planning stages. The air traffic situation at Dallas-Fort Worth was simulated on laboratory radarscopes with projections made for future flight pattern growth, the spokesman explained.

The communications contract, awarded to Litton Industries' Amecom Division in College Park, Md., calls for an electronic switching system that will be "faster and more versatile" than Nafec's present electromechanical switching system, which it has leased from the Bell System since 1958, according to a Nafec spokesman.

The system is scheduled to be installed in Nafec's new $50 million Technical and Administrative Headquarters building, slated for completion next year, and is expected to be operational by 1981.

Links Among Controllers

Utilizing the latest in ATC telecommunications technology, the system was designed to provide instantaneous and direct voice links among air controllers throughout Nafec's research center.

It will also interface with remote facilities such as the Discrete Address Beacon System sites at Elwood and Clementon, N.J., the spokesman said.

In addition, the communications system will link the controllers with aircraft via radio and with other locations outside Nafec by FTS or regular telephone networks. The system was designed to handle 100 controller positions initially but will be expandable to 250, according to Nafec.

Moreover, each position will be assigned an individual channel on the coaxial connecting cable, providing the controller with immediate access to the cable and to all other points on the network at all times, Nafec noted.

Furthermore, a distributed call processing design in the new system will eliminate the possibility that the whole system may fail because of a problem at any one controller position, the spokesman stated.

Nafec's new system will also provide for "fast, automated reconfiguration of position assignments," according to P.E. Hinely, a project manager at the center's Advanced Engineering and Planning Branch.

In a typical case, Nafec might be asked to determine the effects of sector assignment changes on controllers in the New York En Route Center. That task would entail the reconfiguration of the controller console in the En Route Laboratory to resemble the corresponding position in the New York Center, Hinely explained.

Under the present system, this would require changing the wiring connections on the crossbars in the laboratory building's equipment room — a four- to twelve-hour job that would have to be repeated with every reconfiguration.

With the new electronic switching system, programs for such reconfigurations will be kept on tapes, Hinely explained. A system position in the equipment room will be equipped with a CRT display, tape drive and data entry keyboard.

To change one or more controller positions or functions in any of Nafec's ATC labs, an operator will "simply punch the proper code into the maintenance console keyboard and load a new tape into the system" in less than a minute, according to Hinely.

In addition to enabling reconfigurations, the maintenance position in the new system will be used to pinpoint and isolate system problems as they occur, Hinely said. The system will also incorporate real-time quality control to maintain a continuous watch over the equipment's operational status.

Also featured will be a traffic data logging capability that will permit analysis of system traffic load distribution. It will also allow human factor engineers to determine controller workloads as new enhancements are introduced into the ATC system, the spokesman said.

Nafec also announced another communications system contract, valued at $685,513, awarded to KDI Precision Products, Inc. of Cincinnati. That contract is for a solid-state electronics system that will distribute the signals from radar surveillance sites located around Nafec to the major ATC labs in the new building, a spokesman said.

Delivery on that equipment is expected by next May.

The New BDS Line Printer for DEC 20 users.
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RALPH GORIN, LOTS Computer Facility at Stanford University

BDS now offers a line printer system with the same dependability and performance as the LP 20 subsystem from DEC, but at far less cost. In fact, for the difference in cost, you could almost buy a second printer. The heart of this system is a Dataproducts line printer, same as in the DEC system. The Dataproducts line printer is designed for dependable performance, ease of operation and low maintenance. BDS developed a controller for DEC 20 users with economy and performance in mind.

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Thermostats Now Down to 78°

California Relaxes Limit on Air Conditioning . .

By Jeffry Beeler
CW West Coast Bureau

SAN FRANCISCO — The chances that energy conservation measures will work a hardship on California's DP sites decreased slightly when the state's Public Utilities Commission (PUC) recently relaxed its commercial and residential air conditioning limit by two degrees.

The change in the PUC's rule means DPers and most other business groups can now lower their minimum thermostat settings from 80°F to 78°F this summer.

By granting electricity users an extra two degrees of cooling, the commission has brought the state's air conditioning regulation in line with its federal counterpart, which also calls for a minimum thermostat setting of 78°.

But except for permitting slightly lower building temperatures than before, California's revised room-cooling rule remains basically unchanged from its original, 80° version.

Just as DPers were expected to observe the earlier air conditioning standard, so they are now required to heed the 78° barrier, according to Larry Chow, a senior utilities engineer for PUC. At no time has the commission granted users a categorical exemption from its cooling limits.

On the other hand, if users fear that a 78° or warmer operating environment would seriously harm their hardware, they can apply to the PUC for special permission to ignore the state air conditioning limit. To be approved, however, all applications for a case-by-case exemption must include vendor-supplied performance specifications that clearly prove a 78° room would produce equipment breakdowns or otherwise stall DP operations.

End to Perplexity

The PUC is said to have loosened its air conditioning rules primarily to eliminate the two-degree discrepancy between its own cooling limit and that of the federal government. "There has been a heck of a lot of confusion about the two regulations, and we've gotten an awful lot of calls from the public," Chow said.

Much of the perplexity over the rules arose when the federal government announced its 78° air conditioning limit last July, only about a month after California introduced its own, more stringent restriction. Many electricity customers in the state were uncertain about which rule took precedence.

Another force that prompted the PUC to relax the state's air conditioning requirement was a slight easing of California's recent energy shortage. When the commission imposed the 80° cooling limit on June 19, the controversial Rancho Seco nuclear power plant near Sacramento was still shut down for inspection following the accident at Pennsylvania's Three Mile Island plant.

Since then, however, the Rancho Seco plant has resumed operations, and the resulting increase in generating capacity has boosted the state's power reserves. As a result, "the [energy] situation in California is not as critical as it was in June," Chow explained.

Three-Point Plan

The PUC's order forbidding most California-based users from operating their air conditioners below 78° forms only one part of a three-point conservation plan, which also calls for water heaters to be operated at no more than 105° and room furnaces to be set at 68° or less during the winter.

The federal equivalent of that plan contains similar provisions except for a three-degree lower ceiling on room heating.

Although the state's air conditioning limit now conforms to the federal government's, significant differences still separate the California energy conservation plan from its nationwide counterpart. While the federal measure covers only nonresidential sites, the state plan applies to homes as well as businesses.

In fact, the California plan provides categorical exemptions for just two classes of businesses: supermarkets and other enterprises whose main activity is food preservation; and health care facilities, including hospitals and convalescent homes. All other business personnel — including DPers — must comply with the plan's requirements, qualify for an exemption on a case-by-case basis or risk stiff penalties, including a possible loss of all electricity.

The state and federal energy conservation plans also differ in duration. The federal regulation lasts until next April, while the state's is due to expire at the end of this October.

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Although 'Buts' Exist

.. And Users See Few Problems With Equipment

By Howard A. Karten
CW Staff

Will DP equipment run successfully and error-free in a computer room set at the 78°F temperature recently mandated by California's Public Utilities Commission? Well, yes and no.

After speaking with engineers from several hardware manufacturers, *Computerworld* found general agreement that while an ambient temperature of 78° or 80° by itself is not a major problem, there are many ifs, ands and buts that apply.

Spokesmen for the American National Standards Institute and the Computer Business Equipment Manufacturers Association said there are no standards that specifically apply to computer equipment or operating temperatures. However, "most companies build hardware to operate in an IBM 'Class C' environment," according to Eric Ringkjob, a vice-president of Storage Technology Corp. (STC) in Louisville, Colo.

That environment, as specified by IBM, ranges in temperature from 65° to 90° at a humidity level of 85%. Although that environment is used officially only by IBM, "most companies build to meet IBM's environmental standards," Ringkjob noted.

In any case, users of tape and disk drives manufactured by STC don't have to worry about whether their drives will run at higher temperatures: all STC drives are burned in at elevated temperatures for a period of 65 hours, he claimed.

Users of Ampex Corp. equipment also will have few or no problems because an 80° environment presents "no problems" to the company's drives, according to Bob Gaskin, a product manufacturer with the California firm. In actual tests, Ampex's tape and disk equipment has operated at ambient temperatures up to 114, he said.

Users of Honeywell, Inc. equipment, however, may have something of a problem on their hands. A spokesman for the Arizona firm said the company recommends in its site preparation manual that all its systems operate at a nominal 73°, with some latitude allowed as function of the particular equipment.

For the Level 6, Level 62 and Level 64 hardware, this figure is plus or minus 5°, but the margin is more limited for older Honeywell equipment, such as the Series 200, 2000, 600 and 6000. The relative humidity specified for all Honeywell equipment is 30%, plus or minus 10%, the spokesman added.

In addition, Honeywell does not burn in its hardware at elevated temperatures, but does "qualify" it in the design cycle, he noted.

Note of Caution

As if this wasn't confusing enough, a note of caution was issued by George Maneatis, vice-president for computer systems and services of San Francisco's Pacific Gas & Electric Co. (PG&E). The utility, which operates an IBM 3033, a 370/168 and an Itel Corp. AS/6, has set its own thermostat at 78° with "no problems," Maneatis said.

He cautioned, however, that "peripherals might represent more of a problem" than mainframes. PG&E expects to be able to operate without problems, although the firm is looking carefully for any evidence of malfunction and is "watching [our] tape media very carefully."

A different picture was painted by a spokesman for terminal maker Hazeltine Corp. "All our terminals [are specified to] operate at temperatures of up to 100° . . . We burn in our terminals at temperatures of 50°C," he said.

Modems are similar to CRT terminals in that they have no moving parts to generate heat. However, George Kushin, director of marketing for Racal-Milgo Corp. in Florida, said that "over the long term, we would expect to see some degradation" if the firm's products operated for a long time at 80°.

Part of the problem is that internal components produce heat, and users might expect to see reliability problems the longer a piece of equipment were run at an elevated temperature, he explained.

'Hangover From the Past'

Some clarification of this was made by Pat Patrick, vice-president of field engineering for Itel Corp. in San Francisco. "Our hardware will work properly in temperatures from 60° to 90°," but most computer rooms have two thermostats — one for the room itself and one for the space under the raised floor.

Elevated temperatures "should work out OK provided the air in the subfloor is set for 50°F to 65°F, since that's the source of the cooling for computers in most rooms," Patrick said.

Patrick was also able to shed some light on why many users believe their systems would not work properly at 78°: "They say it because, for years, field engineers and others have told customers that systems run best at 75° . . . it's a hangover from the past. It's grown up over many years of usage."

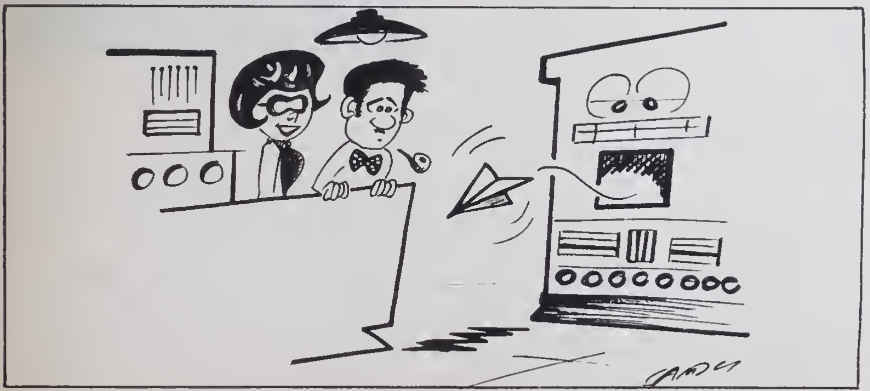
However, an internal component — a chip, a resistor or other electronic component — that is "the least bit weak" will tend to become intermittent at significantly elevated temperatures if run that way for a lengthy period.

The amount of humidity present can complicate this already tangled picture, Patrick noted. "If humidity goes down, systems become sensitive to static. Tape problems can also occur — tape drives themselves are OK, but the media itself can become a problem," Patrick observed.

The future of equipment is not particularly bright in terms of heat production, Patrick warned. As circuitry becomes more and more compact, heat production and dissipation are expected to become more of a problem. "That will be a bigger problem than it is today," he believes.

Despite this conflicting picture, there may be one compensation — though a small one — for those who must work in these environments. Both the California utilities, PG&E and Southern California Edison, have put into practice what they are preaching. As a result, Edison has somewhat relaxed its dress standard.

"Each manager has been given leeway to relax the dress code among employees not greeting the public, and the percentage of tieless employees has gotten high," a spokesman said.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Managers on the Move

BILL L. RUDKIN, director of systems for Sterling Stores at Magic Mart-Sterling Stores, has been elected a vice-president for that Little Rock, Ark., firm.

Rudkin is director of systems with responsibility for all electronic and manual systems utilized in the operation of the 100-plus company-owned and -operated stores.

Prior to joining Sterling, he was a retail systems analyst for NCR Corp. Rudkin has attended the University of Arkansas at Little Rock and Illinois Institute of Technology.

• • •

WILLIAM H. GILLINGER, JR. has been elected to the newly created position of vice-president of information services at WTC, Inc., the air and surface freight forwarding company in Los Angeles.

Gillinger joined WTC in 1977 as director of data processing after information processing management positions at Gottfried Consultants, Multicomp Pacific and the Chancellor's Office of the Califronia State Universities and Colleges.

Bill L. Rudkin

The new vice-president holds a BS degree in management from Califronia State University at Los Angeles.

• • •

NANCY DAVIS has been named manager of data processing at Wells of South San Francisco, a manufacturer of commercial kitchen equipment.

For the past two years, Davis has worked for the firm as a freelance programmer.

Davis, who worked her way up from keypunch operator to DP supervisor at States Steamship Co., received training from the Automation Institute and IBM.

• • •

ROBERT A. BERGER has been appointed director of information systems for Bentley College in Waltham, Mass.

Prior to the Bentley appointment, Berger served as director of computer services at Pasadena Calif. City Collge, where he designed and directed the implementation of a college-wide, computer-based real-time system for all administrative services.

Nancy Davis

Berger has also served as a management consultant to Coopers and Lybrand. He holds an M.S. degree in public administration from the University of Southern California and a bachelor's degree from the Universisty of California at Los Angeles.

• • •

RICHARD WISEHART has been named deputy director of Operations and DR. SABINA SAIB and DENNIS COOPER have been appointed directors of departments within the DP and software operations at General Research Corp.'s (GRC) Santa Barbara Division.

Saib will become director of the Software Quality Department and Cooper will head the newly formed Decision Science and Gaming Department.

Wisehart joined GRC in 1968. Prior to that, he spent three years with AC Electronics and seven with the U.S. Naval Avoinics Facility in Indianapolis. He holds M.S. and B.S. degrees in engineering from Purdue University.

Saib joined GRC in 1976 after several positions with the University of California and with ITT Gilfillan. She holds a doctor of engineering degree from the University of California at Los Angeles and an M.S. in electrical engineering from the Unviersity of Maryland.

Cooper joined CRC in 1975 after six years with Bell Telephone Laboratories in Whippany, N.J. He earned an M.S. in electrical engineering at Stanford University.

Cooper is co-developer of one of the five top chess-playing programs in the country and developer of a number of computing techniques for representing knowledge and simulating human thought.

• • •

DONALD E. CROCKER and K. GERALD LONG have been promoted to assistant vice-presidents at Equifax, Inc. Both will be based in the firm's home office in Atlanta.

As assistant vice-president of corporate computer operations, Crocker will have overall responsibility for the Computer Services and Technical Standards and Services Departments, including the processing and operational use of systems designed for Equifax affiliates.

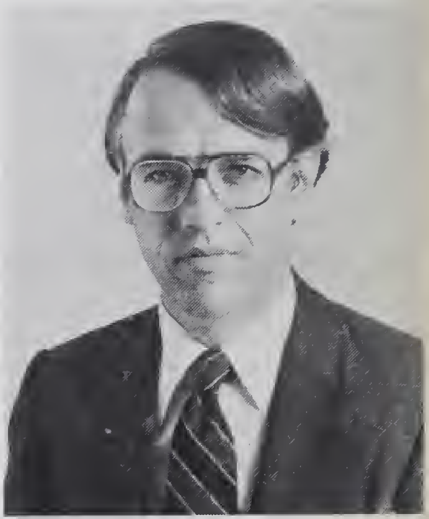
He joined Equifax in 1967 after serving in the U.S. Air Force and attending Auburn University.

Long, as vice-president of corporate systems and programming, will be responsible for the design, programming and installation of computer systems for the corporation. He attended Kennesaw Junior College and the University of Georgia. He joined Equifax in 1965.

• • •

DR. HORST TEBBE has been promoted to director of information services for the Pepsi-Cola Co., a division of Pepsico, Inc., in Purchase, N.Y.

Tebbe will be responsible for all DP activities including new development in management design support systems.



Dr. Horst Tebbe

Tebbe has been with Pepsico since 1976 and previously held various executive DP positions with General Reinsurance Corp. and Kraft, Inc.

He holds a Ph.D. in computer and information science from the University of Pennsylvania, an M.S. degree from the University of California at Berkeley and a B.E.E. degree from Rensselaer Polytechnic Institute.

Correction

It was incorrectly reported that Jay Yount of Quality Farm and Fleet had been promoted to DP manager [CW, July 9]. Instead, Yount was promoted to DP operations manager, according to the Muskegon, Mich., firm.

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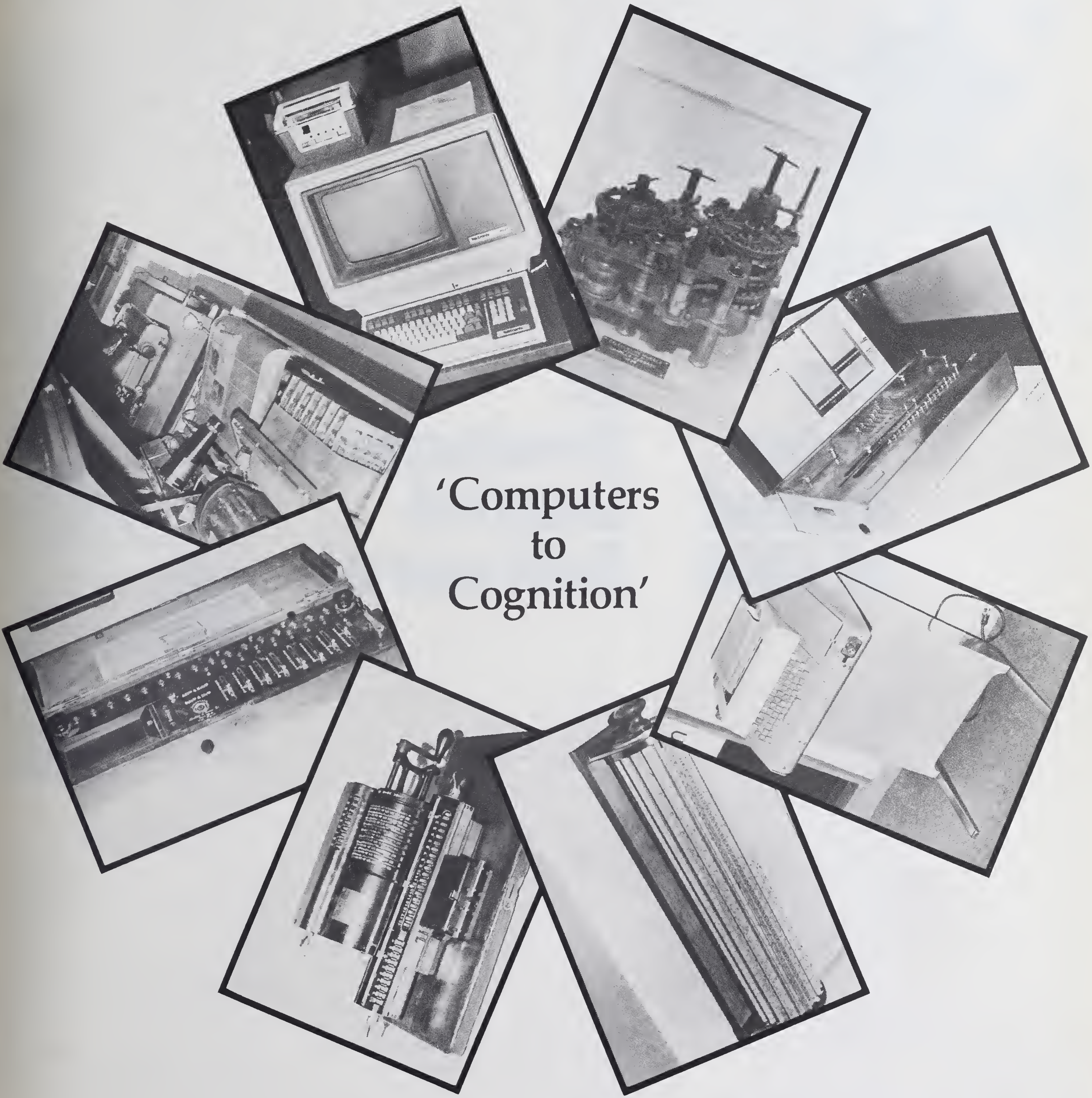

A CW Photo Feature by Ann Dooley

CAMBRIDGE, Mass. — Moving from abacus to artificial intelligence, the computer industry has sprung from small, unsophisticated gears and boxes, grown to large, full-scale computers and then — coming full circle — shrunk to miniature chips and microcomputers.

At a recent MIT exhibit here, some of the equipment and machinery that led to today's technology was shown to demonstrate the transition from vacuum tube technology and cards to the cathode ray tube.

Tucked away in the labyrinth of MIT, the exhibit also outlined MIT's role in the history of computing with photographs of MIT professors working with the Semiautomatic Ground Environment (Sage) computer in 1958 and the Project Whirlwind air traffic control system.

One of the more illuminating aspects of computing's history that was unearthed by the exhibitors was Maflzel's acclaimed Chess-Master. This device astounded the crowned heads of Europe in the early 1800s by beating them at chess — until they discovered the Chess-Master was, in fact, a midget chess master enclosed in an otherwise empty box.

On the more serious side, the exhibit displayed (starting at the top and continuing clockwise) Charles Babbage's calculating wheels, which were designed in 1834; the Millionaire, described as a scientific calculator, used in 1893; and the original material received on a teletypewriter from the first trans-Atlantic message from a Norwegian university to MIT.

Also featured was a Cylindrical Rule designed in 1881, and a Marchant Calculator which featured arithmetic functions, memory, a choice of computing sequence and input/output. An Arithometer built in 1850 was shown, as was a Royal-McBee LGP-30 digital computer featuring 4K 31-bit words and 16 single-address instructions that was used in statistical forecasting. To represent current technology, a Tektronix, Inc. Model 4923 terminal was exhibited.

The equipment and photographs in the exhibit were either part of MIT's own collection or loaned by computer companies for the exhibit.

System Keeps Eagle Eye on Golf Meet Scores

Special to CW

BIRMINGHAM, Mich. — When Australian golfer David Graham's 18th hole double bogey threw the recent Professional Golfers Association (PGA) Golf Championships into a sudden death play-off, all eyes were not glued to the action on the green.

Statistics-minded sports writers crowded around Burroughs Corp. terminals, linked to a large-scale computer at the company's Detroit headquarters, to see which golfer might emerge the winner based on past scores for the first hole. As reporters watched, operators called up data on the TD 830 terminals, which revealed that both Graham and golfer Ben Crenshaw had identical average scores. However, Graham finally won the $60,000 prize when he shot a birdie on the par three third hole.

Held earlier this month at the Oakland Hills Country Club, the PGA Championship is the last major tournament on the 1979 men's professional golf tour and drew more than 140,000 spectators and more than 400 press personnel. To coordinate activities throughout the four-day event, Burroughs installed a computer-based golf information network that not only served as a backup scoring system for PGA officials but also provided continually updated results to the media and offered printed statistical data on the progress of the contest.

Above left: Flanked by walkie-talkie-toting PGA officials, members of the press keep track of scores, feeding them into terminal. Below: ABC-TV worker accesses statistical data from B6800 via PB 830 terminal and feeds it to commentators' room for broadcast.

The golf score analysis program used during the tournament was designed by Compuserv, Inc. of Columbus, Ohio, and was developed and refined by Burroughs for this year's championships, according to Burroughs spokesman Peter Carney.

The scoring network consisted of 13 TD 830 terminal CRT systems on-line to a Burroughs B6800 processor at the firm's Detroit site. In order to provide easy access to the computer, the terminals were strategically located at the PGA's central scoring area, at ABC Television's broadcast control and in the press tent, as well as several other locations at the country club.

Because PGA official rules require it, the initial scoring was done manually. As each player completed a hole, his score was recorded by hand at the central scoring site. This data was then entered into the computer through the terminals. The computer then updated the performance file on each player and produced an up-to-the-minute statistical analysis of the tournament, available for inquiry in 18 formats.

Among the pieces of information available through the Burroughs terminals were a list of the top 15 tournament leaders; a list of the top 15 leaders for the current round; a summary of all 18 holes for the tournament to date including the number of eagles, birdies, pars, bogeys and the difficulty ranking for each hole.

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CSC Agrees to Drop Suit Against City

Cleveland's DP Services Extended Five Months

CLEVELAND — Just one week before a California-based computer firm was scheduled to pull the facilities management (FM) plug on this financially-troubled city, an agreement was reached granting Cleveland at least five more months of DP services.

Computer Sciences Corp. (CSC) has agreed to drop its suit against the city of Cleveland and continue DP operations — past the Aug. 16 cut-off date set by the firm — for the remainder of the original contract, according to Jim Furlong, manager of CSC's news bureau. Under the terms of the agreement, Cleveland will pay CSC $1.7 million in unpaid contract charges and resume paying monthly invoices — estimated to be about $257,000 — on a regular basis.

Furlong pointed out that the extension will not only give delinquent Cleveland a chance to pay back the charges in monthly installments but will "give them an opportunity to put together a request-for-proposal from other companies . . . and enough time to go through a procurement."

System, Staff Supplied

CSC filed the suit earlier this year for bills generated by the city between November 1978 and March 1979 [CW, June 11]. Under the FM contract, CSC supplies one of Cleveland's two IBM 370/158 mainframes as well as a staff of managers, operators and data entry personnel.

The computers support the city's fire and police departments, utilities, regional transit authority and other government departments. They are also used to prepare payroll checks for the city's approximately 9,500 employees, Furlong explained.

CSC's news director noted that a high turnover rate and other personnel problems that have plagued the company's FM facility since the city's monetary dilemma began have been cleared up with the current service extension.

"Since we've been negotiating with the city for a few weeks to arrive at this agreement things have stablized," Furlong said.

Calendar

Sept. 5-7, Chicago — **The Second International Fiber Optics and Communications Exposition in the U.S.** Contact: Information Gatekeeper, Inc., 167 Corey Road, Brookline, Mass. 02146.

Sept. 6-7, Boston — **R&D Conference for Small Business.** Contact: Lakeshore Group Ltd., Suite 508, 207 E. Buffalo St., Milwaukee, Wisc. 53202.

Sept. 10-12, Chicago — **15th National Seminar on Computer Security.** Contact: Data Processing Security, Inc., 235 Northeast Loop, Hurst, Texas 76053.

Sept. 10-14, Birmingham, Ala.— **Introduction to Structural Methods.** Contact: International Software Engineers, 3940 Mount Claire Road, Birmingham, Ala. 35213.

Sept. 10-14, Washington, D.C. — **Training in Project Management.** Contact: Atlantic Software Inc., 910 Lafayette Building, 5 & Chestnut St., Philadelphia, Pa. 19106.

Sept. 11-13, Westlake Village, Calif. — **Fortran Optimizing Techniques for Supercomputers.** Contact: Massachusetts Computer Associates, Inc., 31348 Via Colinas, Westlake Village, Calif. 91361.

Sept. 15, San Mateo, Calif. — **The 4th Annual California Computer Swap Meet.** Contact: John Craig, Editor of *Creative Computing*, RFD Box 100 D, Lompoc, Calif. 93436.

Sept. 17-18, Los Angeles — **Executive Productivity.** Contact: American Management Associations, 135 W 50 St., New York, N.Y. 10020.

Sept. 20-21, London — **Worldwide Printers Conference.** Contact: BIS Marketing Research Ltd., York House, 199 Westminster Bridge Road, London, SE1 7UT.

Sept. 23-26, Chatham, Mass. — **Office of Tomorrow.** Contact: the Institute for Graphics Communications, 375 Commonwealth Ave., Boston, Mass. 02115.

Sept. 24, Paris — **International Micrographic Congress (IMC) '79.** Contact: IMC, P.O. Box 22440, San Diego, Calif. 92122.

Sept. 24-26, Washington, D.C. — **Word Processing Management Workshop.** NIMR Seminars, P.O. Box 3727, Santa Monica, Calif. 90403.

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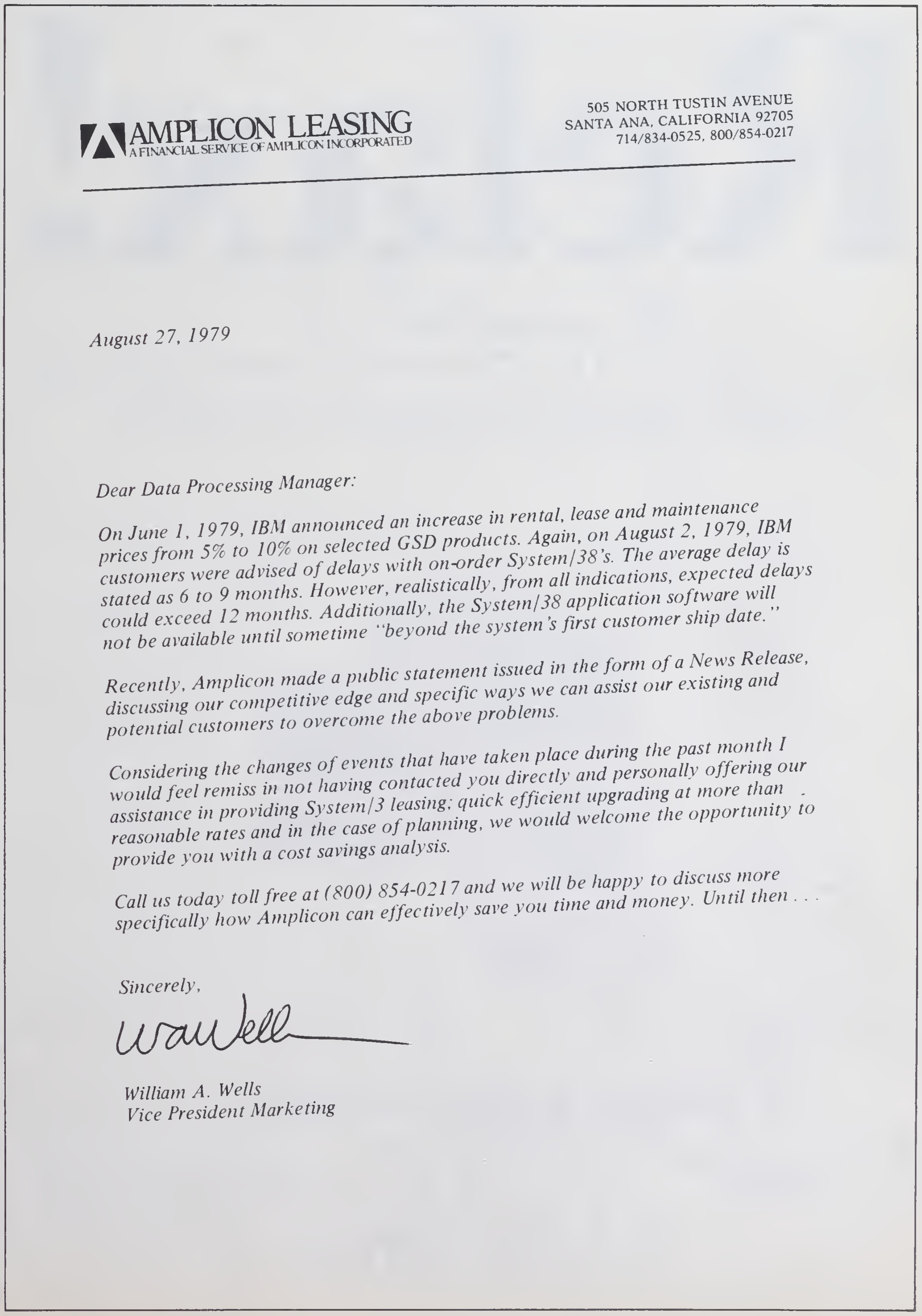

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August 27, 1979

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Call us today toll free at (800) 854-0217 and we will be happy to discuss more specifically how Amplicon can effectively save you time and money. Until then . . .

Sincerely,

WaWells

William A. Wells
Vice President Marketing

Schools' Terminal Net Covers 300 Square Miles

By Jay Woodruff
CW Staff

CLEARWATER, Fla. — A 300-square-mile network of terminals is helping a school district provide advanced computing opportunities for both its high school students and school administrators.

Thirty-eight terminals, located in classrooms and offices, are spread throughout seven of the 13 high schools in the Pinellas County School District. Each school houses three terminals — either two Digital Equipment Corp. LA36s or LS-120s and a Hazeltine Corp. Model 1500 CRT.

The network may someday filter down into the lower school system, according to Richard D. Pate, the board director of Curriculum and Instruction Systems Applications at the school district office and the originator of the proposal to create a terminal network among the high schools.

Students aren't limited to the study of the rudiments of computers and how they run when they attend a high school in Pinellas County. Starting with entry-level instruction in a course called "Man-Made World," they can progress through the two-part "Engineering Concepts" course. Here they are exposed to Fortran, upper-level Fortran and problem-solving after they have learned Basic.

Teachers follow a syllabus, but students are free to continue to do additional programming and projects, such as pollution simulation studies, for extra credit. Also available is "Computer Math," a course Pate described as "a mathematical approach to programs and problem solving."

Educational applications like these are handled through the district's most recent computer acquisition, a Honeywell, Inc. 6605 that was purchased 18 months ago and is located at the county schools system's headquarters in Clearwater.

The 6605 will eventually take over the computerized registration system and the district's on-line attendance and reporting system (Polars), which is now run in St. Petersburg on a Honeywell 1648 time-sharing system in the Science Center of Pinellas County, Inc., Pate explained.

The district, covering a 300-square-mile area and running through a number of telephone switching districts, is organized to keep costs down. "If you stay within a district, a dedicated line of communications is less expensive, but if you cross [into another district, communications become] tremendously expensive," he said.

To minimize these costs, dedicated lines from the distant schools are connected to a Timeplex, Inc. communications multiplexer, which transfers information to and from the mainframe across a single phone line using Paradyne Corp. LSI96 high-speed modems.

Even though the terminal network is a boon to students while they are in the classroom, its utility extends to their future interests as well. The district has put together the Guidance Information System (GIS) that matches the student's career goal with a list of appropriate colleges chosen from 1,700 in the system files.

Value Demonstrated

The system's value was demonstrated recently when a blind senior found she had received a scholarship and had only 10 days to decide on a college and respond to the scholarship offer.

"If a guidance person had gathered the information necessary to help her make her choice, it would have taken a couple of weeks of full-time searching through catalogs. But with GIS, [the guidance people] were able to get accurate, up-to-date information and take care of it in less than one and a half days," Pate said. The student was accepted at the school of her choice and "everything was fine."

In the future, GIS could also include listings of the five Tampa Bay area vocational/technical training centers, which provide post-secondary and evening adult training programs.

Both registration and attendance, along with the district's business applications, are handled through the Honeywell 1648 at the Science Center in St. Petersburg. The attendance program in particular has saved clerical personnel much effort and for that reason will be expanded to cover all 13 schools in the district by 1980, Pate indicated.

Teachers take attendance by marking each student's attendance or absence on a preprinted form, which is processed in time for the appropriate school personnel to learn about it the next morning. The attendance system does the work of three clerical workers and their student assistants, while teachers expend less effort keeping attendance records, he said.

Future Plans

Pinellas County has plans to further expand the Polars attendance system to all 13 high schools as well as to the rest of the school system. The more widely-based system could be especially useful, Pate noted, because it would enable the school district to follow student movement and accurately transfer records from school to school.

Moving the attendance system into the lower schools would also enable the district to offer young students courses in "computer literacy — what a computer is and how it will affect a student's life," the director said.

Pinellas County would also like to use the system to match student job goals to a list of 580 state-defined occupations.

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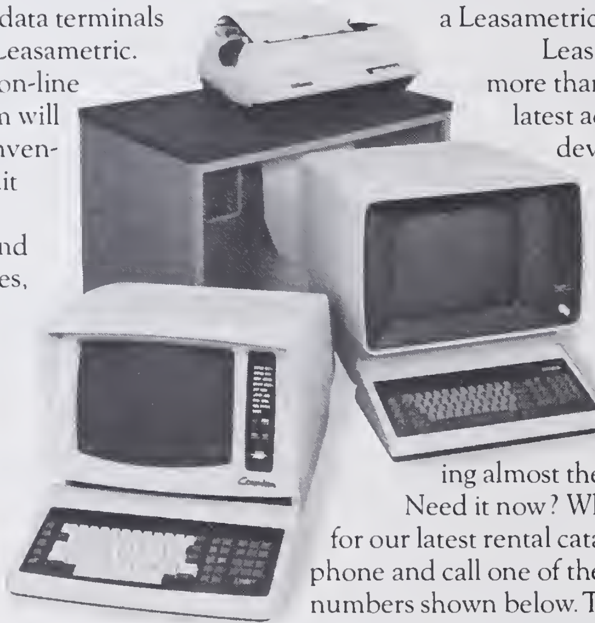

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Smithsonian Service Details 300,000 Research Projects

WASHINGTON, D.C. — Talk about data banks — a branch of the Smithsonian Institution is maintaining computerized information on 300,000 ongoing research projects which it sells to about 25,000 users around the world on request.

A nonprofit corporation, the Smithsonian Science Information Exchange (SSIE) has a staff of 50 scientists who use terminals to "browse" through the computerized files in search of specific subjects for retrieval or updating of information, according to Dr. Donald Elliott, vice-president of SSIE's Division of Scientific Affairs. The system maintains information on projects in just about every field of science and technology, with entries ranging from the most general to the most detailed.

Depending on the nature of a request, staff scientists can provide one-page printouts of research projects the same day or complete "custom" searches for information tailored to individual needs within about three days.

"Immediate access to accurate and complete information on ongoing research projects helps bridge the critical gap — which can be years — between the time a research project begins and the time its results are published," Elliott said.

"Being able to find out what's going on right now helps to avoid unwarranted duplication of research efforts and dollars," he pointed out. "Nobody wants to spend two years doing research only to find that somebody else has already done it."

Project Notices

SSIE scientists regularly conduct and review searches of the data base to produce project notices for users on subjects of high current interest. The results of these searches are compiled into research information packages, which are updated quarterly.

For example, in the area of computer technology, dozens of information research packages are available on everything from computer languages and networks to magnetic bubbles and computer-aided pattern recognition.

Customers of the exchange include personnel in federal, state and local governments, at research centers and universities, in private industry and at foreign research organizations. The information is used in the variety of ways, Elliott said, from revealing gaps in overall research efforts and identifying new research techniques to learning about the work of a specific investigator and stimulating new research and innovation in the private sector.

A food company tapped SSIE's computer files for details on the latest research on detecting and preventing the growth of a certain fungus. And for purposes of innovation, a scientific instrument manufacturer got information on the latest research on the measurement of blood.

Maintaining the information files at the exchange is an IBM 370/138, which stores extensively indexed information on government and nongovernment research active during the past two to three years. The details are gathered from more than a thousand organizations that support research.

"The exchange is the only national source of information on research in progress in all fields of basic and applied research in the life, physical, social and engineering sciences," Elliott claimed.

Every day an average of 400 new and updated project descriptions are entered into the computer and cross-indexed by scientists who are trained in each of the major disciplines.

"Each project record is indexed to an average of 50 subject and administrative codes, so projects in broad subject areas as well as highly specific research topics are easily accessible from the file," Elliott noted.

One-page printouts produced by the computer usually include the project title; supporting and performing organizations, names and addresses; investigator's name and specialty; level of funding; and a 200- to 300-word technical description of the project.

There is a charge for the exchange's services and fees vary according to the nature of the request, Elliott said.

Use of Car Pool Brings Students Course Discount

PAINESVILLE, Ohio — Students who make computerized car pooling arrangements at Lake Erie College and Garfield Senior College here will get an $18 discount for each three-credit-hour course they take this fall.

Garfield, a two-year nonresidential division of the private residential Lake Erie College, had an enrollment of 650 last fall. All Garfield's 1979 students, as well as Lake Erie's commuters — 25% of the student body — will be eligible for the program, for a total of approximately 700 potential participants, according to David Dalsky, assistant director of admissions for the schools.

To recruit participants, course registration forms will include an entry for indicating whether the student is interested in joining the program, Dalsky said.

To all interested students the school will furnish a list, computed by a service bureau, of participating students in their geographical sector who have classes on the same days and at the same times.

The actual car pooling arrangements will be made by the students themselves, he noted.

The project, being programmed by the school's financial office staff, will reduce the cost of a three-credit-hour course from $216 to $198. The schools may also designate special enclosed parking areas for participating students, Dalsky said.

"We anticipate [the program] will help us [attract] students who otherwise might be apprehensive due to distance," Dalsky said. With students traveling from 10 to 25 miles to attend the schools and the price of gasoline ever rising, Dalsky noted, "It just makes common sense if you have someone you can share a ride with."

Response so far has numbered 20 to 25 telephone inquiries about the plan, and the school is "hopeful" the plan will catch on, according to Dalsky.

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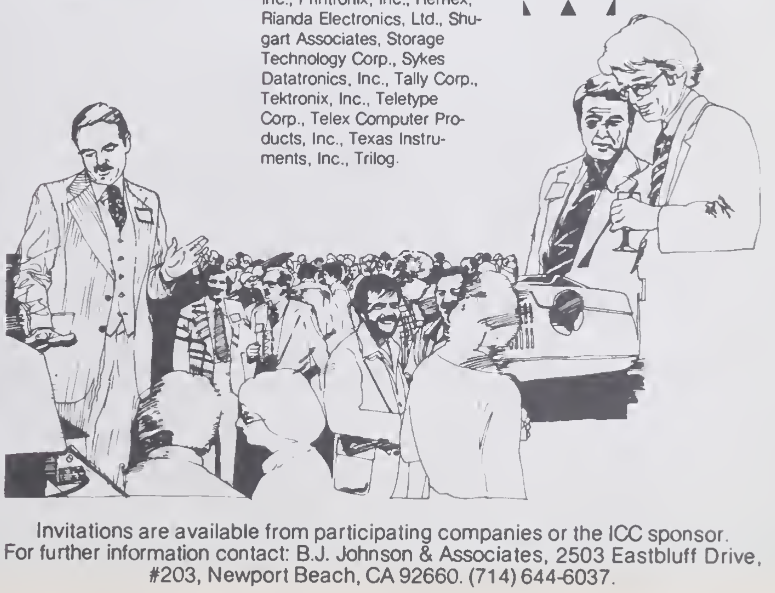

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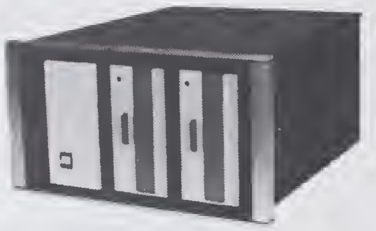

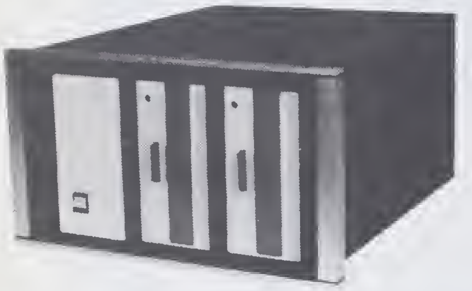

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Software Detects, Fixes Spelling Errors in Copy

By Tom Henkel
CW Staff

COLUMBUS, Ohio — Crummy spellers of the world, take heart. Researchers at Chemical Abstracts Service here are working on a software package that will detect and flag spelling errors in typewritten copy.

Under a $153,000 National Science Foundation grant, Chemical Abstracts developed the programs to save on editing costs. Each program costs about $100 per million words to run — less than it would cost to hire some one to do the same job. The firm, which publishes a lot of technical material, has parts of the program running on its internal system, according to Antonio Zamora, a senior information scientist with the company.

Using an IBM 370/158, Chemical Abstracts currently has approximately 32,000 words stored in a "dictionary." The words themselves never actually appear in the memory. The system uses a Bloom Filter, or four-bit hash code, that reflects a one-to-one mapping with the actual words.

With the hash code approach, the system can run much faster than it would if it had to look up each word in an alphabetic form. The system uses a calling base algorithm, or a quadratic table search, that looks for hash codes stored in a packed array in a psuedo-random fashion.

Because the array is only 80% full, the program searches until it either finds the hash code corresponding to the word or hits a blank, Zamora said.

Chemical Abstracts currently has the spelling detection program working on its system. A second and more difficult application to correct spelling errors is also on the system.

"We have a program that replaces a string and actually makes the correction automatically, so the editor never sees the misspelled work," Zamora said.

Correction Process

To detect and correct a word, the software checks the root word for logical transpositions. Prefixes are stripped off and the word is again analyzed.

If a match is still not found, the program will try the word with various suffixes. If it still cannot be matched with a hash code, the system will flag the word as a possible error by putting three question marks after it or by underlining it.

The program can be run in an on-line or batch mode. The on-line version uses the three-question-mark flag and the batch program underlines. Zamora said.

The program is not without flaws. If the software creates a word other than the one originally intended while trying logical transpositions on the root word, a wrong word will be inserted in the text. But even if the insertion is wrong, the fact that the software identified and tried to fix the error is considered a victory. "If it turns out to be wrong, nothing is wrong because it was wrong to begin with," Zamora said.

In addition, if a word is actually spelled incorrectly, but the misspelling makes another, correctly spelled word — such as writing field for filed — the program will miss it.

Proper names present a problem. Because they are not entered in the system's dictionary, the software will automatically flag an error when it comes across a name. However, if the same name is used several times, it will be flagged only once. If the name is misspelled at some point in the text, a second error will be flagged, Zamora said.

Long and infrequently used technical words present the biggest correction problem. Common words that are misspelled frequently — such as "review" — can be programmed into the system so the software can make the necessary changes. Words that are spelled differently in Britain and the U.S. — such as colour and color — can also be entered into the system, Zamora said.

Designing the system to look at words in context is the next step for Chemical Abstracts. But the firm plans to tread softly on the application until the technique is perfected.

Flags 'Suspicious' Words

The current Chemical Abstracts program will flag "suspicious" words that appear to be out of context. "We have nuclear magnetic resonance, which is a very common concept. So if we find the words magnetic resonance — two out of three — we have a high probability of having the third word. If we don't find it, that would tell us there's something wrong," according to Zamora.

Since the objective of the program is to correct errors and not to create new ones, analysis of phrases is currently restricted to a few that are used frequently.

Chemical Abstracts uses its text editing program for chemistry-related technical editing. The firm is thinking of expanding the dictionary to include biological and other scientific applications, Zamora said.

Study to Cover State of DP Among Insurers

WHITE PLAINS, N.Y. — The Insurance Institute for Research, Inc. (IIR), a nonprofit corporation established by the Independent Insurance Agents of America (IIAA) and 19 leading insurance companies, has initiated a study of the current state of automation among independent insurance agents.

Involving some 33,000 IIAA members as well as number of other agent/-broker associations, the study will focus on specific characteristics such as size, location and operating procedures of each agency and its use of communications facilities, a spokesman stated.

The results of the study will reportedly be used by the IIR in the design of a nationwide telecommunications network linking independent agencies and the companies with whom they do business.

Additional information concerning the nationwide survey and the insurance organization in general can be obtained from the IIR, 222 Mamaroneck Ave., White Plains, N.Y. 10605.

To Offer Data on Foreign Markets

Marketing Information System Set for Launch

By Tim Scannell
CW Staff

WASHINGTON, D.C. — The U.S. Department of Commerce will launch the pilot of an international, computer-based marketing information system later this year that will eventually act as an electronic mediator between U.S. exporters and their foreign customers.

Designed to encompass no fewer than seven different business data files, the Worldwide Information & Trade System (Wits) with initially be available to only a few countries overseas and a handful of U.S. manufacturers. As early as September 1980, however, a system prototype will be operating in more than 20 foreign countries, allowing on-line communications and information exchange between them and hundreds of U.S.-based firms, according to Maurice Kogon, Wits' program director.

"The whole purpose is to get information into the hands of the buyer and the seller quickly so they can make more intelligent marketing decisions," Kogon said, outlining the Commerce Department's reason for the project, which will cost about $4 million in its first year. "There are a lot of bits and pieces of information around, but the average, small and inexperienced firm we're trying to reach doesn't know what exists. Most of the [available] sources are serving larger clients and their prices are too high."

In the U.S., Wits would be accessible through terminals located in the firms themselves or at designated centers such as Chambers of Commerce and universities. Foreign users could use the system with terminals stationed at American embassies, trade fairs or local commerce bureaus.

The fact-filled system would reportedly provide information from the U.S. Supplier File, the Foreign Customer File, the U.S. Supply Leads File, the Foreign Customer File and the Exporter Advisory File data bases. It would also allow firms to draw data from a Marketing Information File and a Promotional Events File.

By using the system, an executive interested in export could find the best markets for a company's product, find out exactly who does business in that market, ascertain whether particular selling prospects are improving or getting worse and even discover how to conduct business in a certain market — through an agent or with the company directly, Kogon said.

While the Wits director noted that most of the information carried by the multidata base service is already available from the U.S. government, he said the Commerce Department project is the first to automate the whole informational affair. In addition, comprehensive market surveys can cost anywhere from $2,000 to $20,000, which makes them prohibitive for the average small firm, Kogon pointed out.

"With Wits you can get the market for baseball bats in Taiwan, how you sell baseball bats in Taiwan, some hot trade leads for baseball bats in Taiwan and what can be told about the buyers of those baseball bats in Taiwan," Kogon observed. "It's the integrated nature of the data base that gives it the impact."

Wits will be available to domestic and foreign business users over commercial time-sharing facilities or though retrieval services such as Lockheed Information Systems' Dialog or Systems Development Corp.'s Orbit. Users will pay standard time-sharing access and retrieval fees, and additional charges will be added for certain off-line services such as lengthy reports or printouts, Kogon said.

Although no one firm has been selected to handle the Wits DP duties, Control Data Corp. has been contracted to provide support for various system tests.

Since the system will essentially transfer information from U.S. government-selected areas abroad to U.S. firms, Kogon doesn't believe the transactions will be affected by transborder data flow regulations.

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Telephone: Bridge, Not Barrier

Three-City System Lets Deaf People 'Converse'

By Marguerite Zientara
CW Staff

MENLO PARK, Calif. — A tricity computer-based communications network, now in its second month of operation, is using telephones as a bridge instead of a barrier for the deaf.

The Deafnet project, which could become nationwide within five years, allows a deaf person to hold a real-time conversation with someone at another location by typing on a terminal and reading the reply on a CRT screen or printout, according to Dr. Earl Craighill, project leader of Research in Telecommunications for the Deaf at SRI International here.

Currently, a small number of teletypewriters are connected by modems to telephone lines, allowing the deaf to communicate with each other over telephone lines. Deafnet, rather than replacing that system, aims to extend it by showing that older terminals can communicate with new terminals by "placing calls" through computers instead of dialing each other directly.

The computers would permit the transmission of data between incompatible terminals, allowing communications that otherwise would not be possible.

While the demonstration network will include 200 to 500 users in Washington, D.C., 50 in San Francisco and 50 in Boston, the project could conceivably extend to the more than six million Americans with impaired hearing by 1985.

Until now, only a very small percentage of deaf people have used telecommunications services. About 20,000 to 30,000 deaf people in the U.S. — less than 1% of the total — currently use relatively old teletypewriters with couplers to send and receive printed messages over telephone lines, Craighill said.

Conference Calls

Funded by a $400,000 Department of Health, Education & Welfare (HEW) grant, Deafnet is based on a time-shared Digital Equipment Corp. PDP-10 in Boston, a dedicated PDP-11/70 with 128K words of memory at Gallaudet College in Washington and a PDP-11/40 with 128K words of memory located here at SRI.

Real-time interactive communications is available locally in each city, and presently up to five people can talk together. The system also allows message storage among the cities, Craighill said.

"We're trying to explore ways to intermix an archiving system on magnetic tape with disk storage," he added. "The disk storage would give a fairly rapid, almost instantaneous retrieval of messages, while the archival system would offer longer term storage."

The system, up and running in the three cities, allows communication between Washington and San Francisco, between Boston and San Francisco and one way from Washington to Boston. "The other way should happen fairly soon," Craighill noted.

The Boston project is actually funded by a separate HEW contract, but the two groups are working very closely on the system. Currently, the Boston-San Francisco connection is over the Arpanet network and the Washington-San Francisco connection is via telephone lines because of financial considerations. "We didn't happen to have a Washington Arpanet connection, and it would have cost us quite a bit to have one put in. Even though that might have lowered our transmission costs, it would have significantly increased the equipment costs," Craighill explained.

The researchers are also looking into other services to find the most cost-effective method of joining parties. "There are no problems with the technology; it exists now," Craighill said. "The problems are finding the most economical solution, the most appropriate method of funding and gaining acceptance from potential users."

Participants chosen to partake in the demonstration project include college professors at Gallaudet and administrators and officers of deaf clubs — people at the administrative educational level who have contacts in the deaf community, Craighill said.

"We want to get people on the system who can understand this new concept fairly rapidly and can then bring in their friends, students and associates and help them get on-board as fast as possible," Craighill explained.

Secondly, Craighill noted, the project aims to use "natural communication patterns."

"We want to find out if this kind of service can really improve communications," he said, adding, "We don't want to generate new communication patterns simply because we've got a different way to communicate."

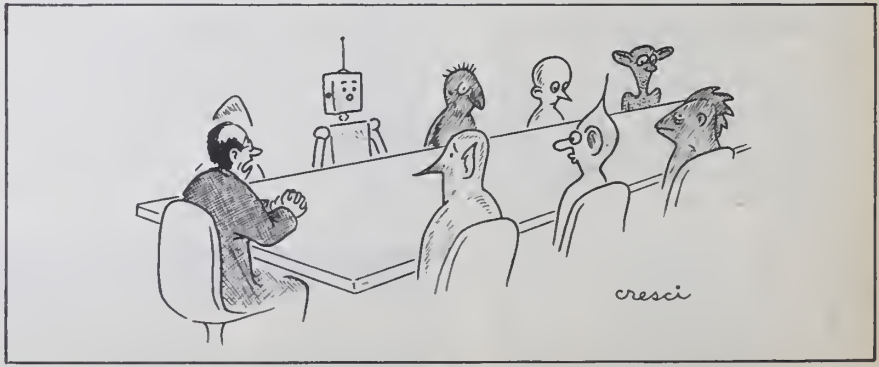
While most of the initial participants own teletypewriters costing $400 to $700 each, Craighill said users who now cannot afford terminals will be able to acquire personal computing equipment at lower cost and therefore will be more likely to access the network.

Emergency Help

Deafnet itself will be a boon to the deaf, but even bigger and better things may be in store for the years to come, Craighill said. In the future, the system could be expanded for such uses as providing a printout of up-to-date news for the deaf with the same speed that radio and television provide news for the hearing.

Currently, a number of commercial interests and fire departments, hospitals and police stations are installing terminals to communicate with the deaf, he added.

In addition, SRI is working on an emergency telephone number for the deaf that would allow them to dial 911 on a terminal and be routed to the appropriate department or agency. "If the person didn't have a terminal with him, we're investigating how the computer could decode a standard Touch-Tone telephone pad. A deaf person could then key in a code indicating the type of emergency occurring," Craighill said.



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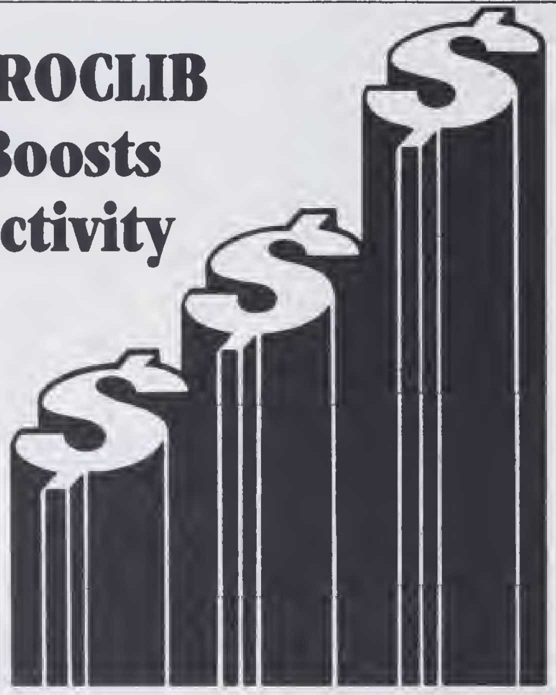

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What Ever Happened to PL/I?

What Ever Happened to PL/I?
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What Ever Happened to PL/I?

By Jack M. Wolfe

Rosy predictions of its future have faded. Vast Cobol libraries, hardware considerations and an overly rigid image explain why PL/I has not yet lived up to expectations. Yet, for those who use PL/I, the language works well indeed, reports the author.

Five and one-half short years ago, Daniel D. McCracken, now president of the Association for Computing Machinery, envisioned a rush to embrace the PL/I programming language.

"I predict that within the three-to-five-year future, there will be, at long last, a swing to PL/I, precisely because it is well suited for structured programming," McCracken wrote in a 1973 magazine article.

How well has that prediction held up? A study of the extent of PL/I usage in business data processing turned up some interesting answers.

I contacted 25 organizations, mostly large, well-known companies or government agencies in the U.S. and Canada, to participate in the study. Copies of a programming flowchart (Figure 1 here, adapted from Figure 2, "Structured Programming," *Datamation*, December 1973) were sent to the 25 organizations. DP managers in each organization were asked to administer the test problem to 10 of their programmers who had had at least one year of experience in the organization. The flowchart, it was expected, would lead the programmers into using structured programming.

Instructions regarding the language to be used in solving the problem were deliberately nonspecific. There were no instructions about the use or avoidance of GOTOs (branches), and the term "structured programming" was not mentioned at all. The programmers were told to use whichever language they would use if they were actually writing a moderately sized program in which the type of form represented by the flowchart appeared a number of times.

Fourteen of the 25 organizations participated in this project, with a total of 142 programmers responding — an average response of slightly more than the 10 solutions requested per organization. Of the remaining organizations, three were unable to participate and eight did not respond. The 68% response and the 56% full participation in a survey of this kind, which required diverting programmers away from their regular work even for a short time, are probably rather favorable response rates.

Of the 142 responses, Cobol was the predominant choice of language selected to solve the programming problem. The results are tabulated in Figure 2.

For the purpose of this study, I have grouped the two instances of Algol along with the 11 instances of PL/I and considered the response as equivalent to 13 PL/I cases, as shown in Figure 3.

Of the 142 solutions presented, 9% of the respondents (13 persons) used PL/I to solve the problem and 91% (129 persons) did not.

In addition, 31% of this latter group (40 persons) said they were familiar with PL/I, yet they chose another language (usually Cobol) for the job at hand.

So, the three-to-five-year swing to PL/I predicted in 1973 apparently did not take place, at least not within the group of the 14 organizations studied.

Here's another interesting finding: Of the 53 programmers familiar with PL/I (40 who knew the language but didn't use it plus 13 who knew it and did use it), only 25% (13 persons) actually chose to use PL/I in their solutions. And 10 of those 13 solutions came from one company (see box).

Of the remaining 132 solutions submitted by the other 13 companies, only three were done using PL/I. Thus, of the 43 programmers in those 13 companies who were familiar with PL/I, only 7% (three persons) actually used this language for the problem.

What do these figures mean? With only 7% use of PL/I among the programmers who did know this language in those 13 companies, it appears that the predominating influence of company policy at present is toward Cobol, not PL/I, even for programmers who are familiar with PL/I. It should be stated, however, that some companies using Cobol show strong evidence of using structured programming.

Of the 129 programmers who did not use PL/I in their solutions, 9% (12 persons) made at least one error in this relatively simple programming job. None of the 13 PL/I programmers made any errors in their programming of the same job, but because of the small size of this group the observed difference in error rate cannot

(Continued on Page 22)

A Particular Instance of Donaldson's Figure 2
(prepared by the author for use in this study)

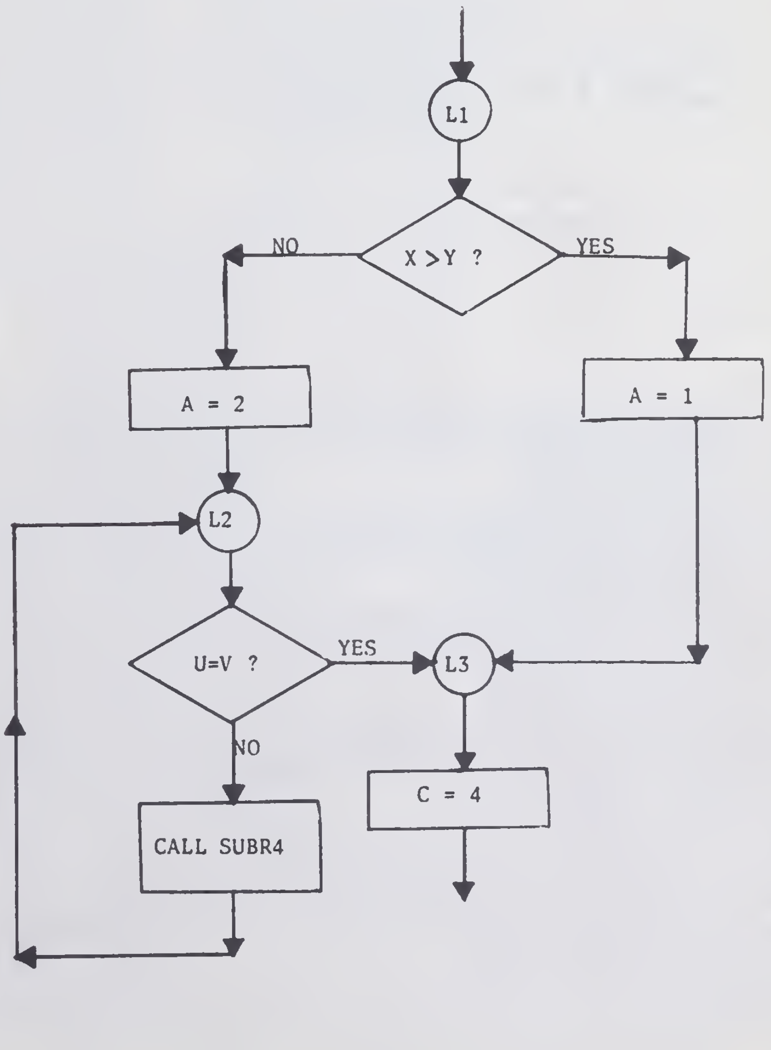

Figure 1

Programmer's Choice of Language for Programming of Figure 1

Language	Frequency	Percentage
Cobol	115	81%
PL/I	11	8%
Fortran	9	6%
Assembler	3	2%
Algol	2	1%
Basic	1	1%
Other	1	1%
	142	100%

Figure 2

Programmer's Choice of Language for Programming Figure 1 (with Algol included with PL/I)

Language	Frequency	Percentage
Cobol	115	81%
PL/I	13	9%
Fortran	9	6%
Assembler	3	2%
Basic	1	1%
Other	1	1%
	142	100%

Figure 3

be considered statistically significant.

Eleven of the 115 Cobol programmers erred in this job as well as the one programmer who used Basic. The 12 programmers who used Fortran or Assembler language did the job correctly although their programs were generally not as easy to follow for future maintenance as were the PL/I solutions to the job at hand.

About one-third of the Cobol programmers who did the job correctly showed use of the concepts of structured programming and did the job, moreover, without the use of any GOTOs. Many of the others who did use GOTOs did so in a manner that was easy to follow and that would be easy to maintain. But the total job in this study was not intricate.

The PL/I programmers more uniformly demonstrated superior programming than did the programmers of any of the other groups.

The Cobol programmers who did the job correctly and did use GOTOs used an average of 2.6 GOTOs in their correct solutions for the job of Figure 1. Of the 11 Cobol programmers who did not do the programming correctly, the evidence indicates that the errors cannot be attributed to a greater use of GOTOs.

Programming without GOTOs must not of itself be considered correct or superior programming. Whereas 35% of the 104 correct Cobol solutions used no GOTOs, five, or 45%, of the eleven incorrect Cobol solutions also used no GOTOs.

Some of these incorrect solutions with no GOTOs might have been arrived at because these programmers might have suspected that the object of the test problem was to see whether the programmer was using structured programming, which they took to be synonymous with GOTO-less programming. Programming errors are somewhat likely to occur when the programmer is actually thinking in terms of nonstructured programming concepts and then attempts to transform his program by forcing the elimination of the GOTO statements. On the other hand, the programmer trained in the concepts of structured programming will think in terms of those constructs, which of themselves will tend to eliminate or at least reduce the use of GOTOs.

Pronounced Difference

The difference in the use of GOTOs between the PL/I programmers on the one hand and the Cobol programmers on the other was very pronounced. It was not necessarily an *avoidance* of GOTOs in the PL/I programming that produced superior results. It may well be that the more deliberate training in *thinking* in terms of block constructs in PL/I programming is the important factor in producing the generally superior programming observed with PL/I. Such training will of itself tend to diminish the use of GOTOs even without any specific attack directed against the GOTO.

The PL/I programming provided better documentation by far than the programming in the languages other than Cobol. About one-third of the Cobol programmers, however, did the job in as well-structured and clear a manner — and without the use of any GOTOs at all — as did the PL/I group. In the cases of the Cobol programmers who did employ GOTOs, in numerous instances the programming was virtually as clear as in the PL/I programs.

The judicious use of GOTOs did not diminish the clarity of many of the Cobol programs. A lack of clarity of the program, which would make it more

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difficult for program maintenance, is by no means a necessary characteristic of Cobol. But it would appear highly worthwhile for a company that does use Cobol to provide training in the concepts of structured programming, provided that such training does not prescribe a rigid policy for completely GOTO-less programming under all circumstances.

This study, of course, was not intended to be critical of McCracken's prediction but rather merely to follow up on it and determine the extent to which a "swing" to PL/I actually did occur some five years later.

The present sample of companies, of course, may be too small to be representative. The participating companies, however, do appear to be representative in type. They included an airline, three large manufacturers, a bank, three insurance companies, a state university computer center, three publishers and two government agencies.

Why Not PL/I?

There are probably many reasons why more users have not adopted PL/I. Companies that have a substantial commitment to Cobol because of their large library of programs in that language do not readily make a transfer to another programming language.

In some cases, possibly, hardware considerations may not have lent themselves to a company's switching to PL/I.

Another reason may well be the adaptation of Cobol to incorporate features that make it amenable to structured programming. Books and instructional workshops and seminars, moreover, have become available for structured programming in Cobol since McCracken's prediction of 1973.

It may well be that the strong identification of structured programming with GOTO-less programming tended to dissuade many programmers and programming supervisors from embracing structured programming.

Indeed, the GOTO controversy has been fueled regularly.

Donald Knuth, in his monograph *Structured Programming With GOTO Statements*, Computer Science Department, Stanford University, May 1974, said: " . . . what I am really doing is striving for a reasonably well-balanced viewpoint about the proper role of GOTO statements. I shall argue for the elimination of GOTOs in certain cases and for their introduction in others."

And Knuth quoted Edsger Dijkstra as writing in a letter: "Please don't fall into the trap of believing that I am terribly dogmatical about [the GOTO statement]. I have the uncomfortable feeling that others are making a religion out of it, as if the conceptual problem of programming could be solved by a single trick, by a simple form of coding discipline!"

Later in the monograph, Knuth wrote: "Now that I have discussed how to remove GOTO statements, I will turn around and show why there are occasions when I actually wish to *insert* them into a GOTO-less program. The reason is that I like well-documented programs very much, but I dislike inefficient ones; and there are some cases where I simply seem to need GOTO statements, despite the examples stated above."

I do not wish to leave the impression that Knuth is heartily in favor of, or indifferent to, the use of GOTOs in general. As he said in the reference cited above, "As soon as people learn to apply principles of abstraction consciously, they won't see the need for GOTO and the issue will just fade away."

Edward Yourdon, in his book *Techniques of Program Structure and Design* (Prentice-Hall, 1975), gave a fine and clear presentation of structured programming in various programming languages as well as of the GOTO controversy. He quoted Prof. William Wulf, a prominent authority on the subject, as stating:

" . . . the purported inconvenience of

(Continued on Page 24)

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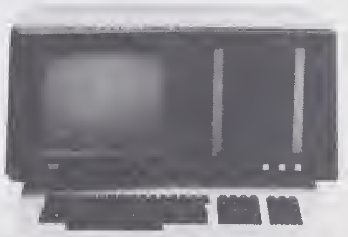

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(Continued from Page 23)

programming without a GOTO is a myth. Programmers familiar with languages in which the GOTO is present go through a rather brief and painless adaptation period. Once past this adaptation period, they find that the lack of a GOTO is not a handicap; on the contrary, the invariant reaction is that the enforced discipline of programming without a GOTO structures and simplifies the task."

It is my opinion that one reason McCracken's prediction about structured programming did not materialize as he had expected may well be the unfortunate identification in the [programming] public's mind of structured programming with a rigid, uncompromising adherence to GOTO-less programming.

Experienced programmers and programming supervisors who had produced substantial programs with good organization, good annotation and documentation in a form easy to understand and maintain but with use of GOTOs were made to feel they had sinned and that their programs were defective and difficult to maintain. They were castigated as if their judicious use of GOTOs was tantamount to spaghetti-like programming. Illustrations of the worst types were cited as though they were necessary characteristics of all programs employing GOTOs.

Such an attitude toward the productive and effective laborers in the vineyards could well be expected to stiffen their resistance about learning the new concepts of structured programming.

Canadian Solution

A large Canadian insurance company that participated in this study returned 10 solutions in PL/I to my test problem. The programming was done uniformly well. The results were well-structured and contained no GOTOs.

Although nine of the 10 programmers were familiar with other languages, mostly Cobol, they selected PL/I for this job.

The group, made up of five men and five women, was relatively young — ranging in age from 23 to 30, with the mean age at 25.6 years. Their programming experience ranged from two to nine years, with a mean of 4.3 years.

In my opinion, this company may have far less difficulty in program maintenance than other companies whose procedures for relatively standard kinds of jobs may be unduly diverse.

The extra effort placed on training in this company may well prove to be a highly worthwhile investment.

The *excessive* use of GOTOs is a symptom of nonstructured *thinking*. It is not the GOTOs of themselves that should be attacked, but rather the *thinking* in nonstructured, nonblock form. It is not the symptom that should be attacked; the remedy would appear to lie in training in the concepts of structured analysis. The GOTOs will then of themselves be reduced or eliminated.

If structured programming concepts were taught without so much emphasis on the avoidance of GOTOs, it is my opinion that the progress toward McCracken's prediction would be greater.

During a National Computer Conference about six or seven years ago, a professor at a prestigious university discussed the case for GOTO-less programming. He stated that in his university's introductory course in programming using a form of PL/I, the concepts of structured programming were paramount and use of GOTO was prohibited.

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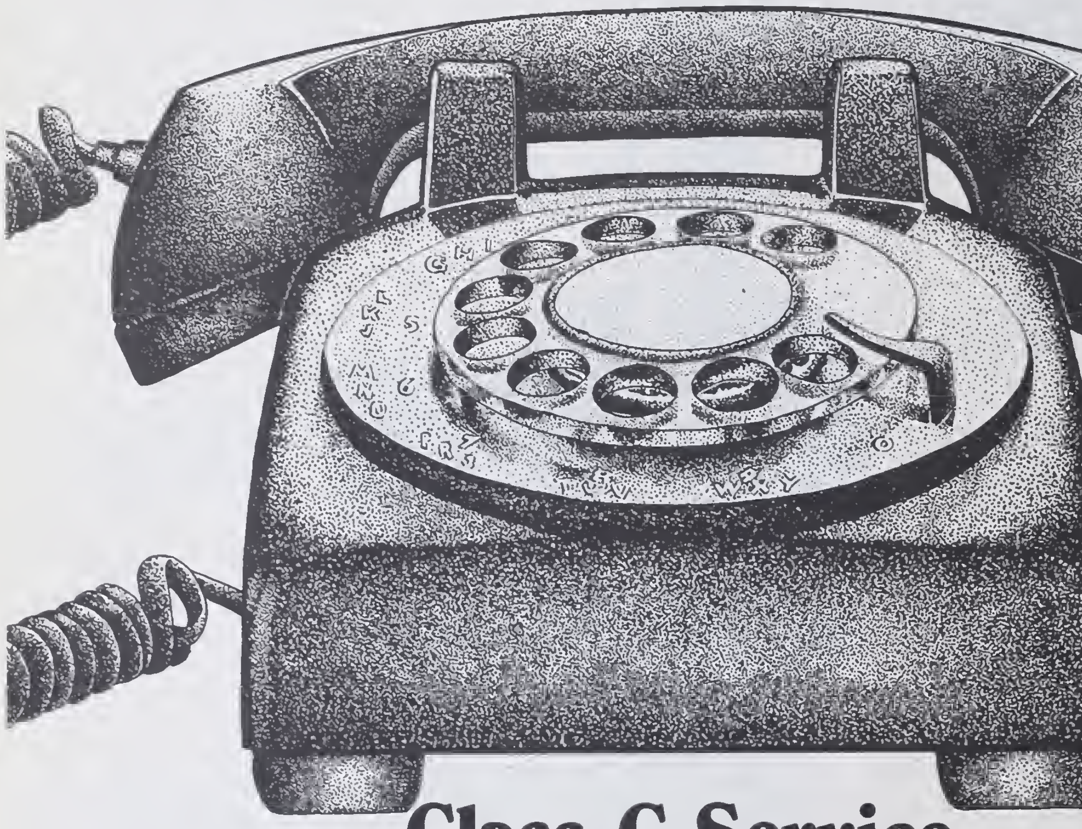

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gram, the speaker said that sometimes it takes a lot of ingenuity but the student is required to do the programming with no GOTOs at all in order that his work on that assignment be accepted. The apparent object here was to convince the student that with some effort he *could* do all his programming without using any GOTOs.

The student who proceeds accordingly, albeit reluctantly and unconvinced that it is worth the effort and the complication, may subsequently — after graduation — become somewhat less of an advocate and practitioner of structured programming because of his recollections of greater complications in some cases by the rigid requirement of a complete and absolute avoidance of GOTOs in his student days.

Forcing a requirement of no GOTOs may well prove to have been counterproductive. It may actually delay the recognition of the potential benefits of structured programming.

Readers who wish to pursue the GOTO programming controversy further may wish to see the extensive bibliographies in the Knuth and Yourdon references cited above as well as Glen E. Newton's A Partially Annotated Bibliography of Top-Down and GOTO-less Programming, Washington State University Grant-In-Aid 10C-2457-1078, 1975.

The author wishes to express his appreciation to Henry H. Leitner, graduate student in the Department of Applied Mathematics, Harvard University, for reviewing the statistics and making valuable suggestions in the preparation of this article.

Jack M. Wolfe is professor emeritus of computer and information science at Brooklyn College of The City University of New York.

Wolfe received his early training in computer work more than 20 years ago from instructional programs for faculty members organized by Remington Rand Univac, IBM and Burroughs Corp.

In 1957, as professor of mathematics, he introduced courses in computer programming and other aspects of computer science into the curriculum of Brooklyn College. Ten years later, those courses formed the nucleus of the department of computer and information science, which today offers both undergraduate and graduate courses.

Wolfe played a significant role in the early educational development of several thousand persons now employed in computer positions throughout the country.

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EDITORIAL

A Cheaper Solution

The Federal Aviation Administration (FAA) has just purchased a $5.35 million computer-based communications system for its National Aviation Facilities Experimental Center (Nafec). The stated reason for the communications system is for research to "increase the safety and efficiency of U.S. air [traffic] control."

The system will allow Nafec to analyze and perhaps solve air traffic problems anywhere in the U.S., primarily through simulation techniques. The sophisticated system, which replaces an electromechanical switching system leased from Bell since 1958, will be housed in Nafec's $50 million technical and administrative headquarters, slated for completion next year in Atlantic City.

While there is no doubt that air traffic control needs all the help it can get in these days of congested airways, the FAA seems to be pointedly ignoring a less expensive and more immediate solution to some of air traffic control's technological ills.

The lack of backup computer systems at a number of airports around the country — notably O'Hare International, the world's busiest — has repeatedly resulted in outages of alphanumeric displays on air traffic controllers' radarscopes [CW, March 20, Nov. 6, 1978; March 26, April 23, June 18, 1979]. Not only do such outages often result in air traffic jams because controllers then must maintain more distance between arriving and departing airplanes, but in nearly every instance controllers described the situation as "potentially extremely dangerous" for passengers.

Although air traffic control can be done effectively and efficiently without alphanumerics, the danger lies in the transition a controller must make from visible, alphanumeric data (indicating a plane's ground speed and altitude, the airline name and the flight number) to a mental, three-dimensional picture of all the airplanes being controlled. The transition could bring about momentary disorientation in a controller, causing him to lose track of the airplanes he is controlling and increasing the chance of a mid-air collision.

Members of the Professional Air Traffic Controllers Organization (Patco) at O'Hare demanded a computer backup system, among other things, in a 1975 lawsuit filed against the FAA, the Civil Service Commission and the Department of Labor. The trial of that case took place in January 1978 and a decision is still pending. Four years have passed since the suit was filed and O'Hare still has no backup system.

If the FAA really wants to increase air safety, it should listen to the people who work with the existing technology and give them what they need now.

DATA PAST

Five Years Ago
Aug. 28, 1974

STOCKHOLM — The IBM terminals of tomorrow were envisioned as having keyboards without keys and able to operate in environments that would cripple today's terminals, judging from the Model 5937, which debuted here. Instead of a keyboard, the "industrial" terminal was designed with an almost vertical flat mylar panel and a recessed power switch to prevent accidental shutdown.

— — —

BOSTON, Mass. — The Medical Information Bureau was forced to cease collecting and storing confidential health information on insurance applicants without their knowledge as a result of pressure brought by the state insurance commissioners of Pennsylvania and Massachusetts.

Eight Years Ago
Aug. 25, 1971

WASHINGTON, D.C. — President Nixon's price freeze was seen as a boon for computer users — if the large mainframe manufacturers decided to heed it. Under the President's plan, manufacturers were to be allowed to charge the highest rates "substantially" in effect in the 30 days prior to the Aug. 15 announcement — which would cause some hardware price increases announced after that date to be cut back to earlier rates.

LETTERS

Knowledge Lacking

Having recently made the transition from systems analyst to DP auditor, I was amazed at the lack of a common body of knowledge in this area.

No one will dispute that DP auditing is far behind data processing. The question is what will be done to upgrade the knowledge and proficiency of its practitioners.

I am a member of the EDP Auditors Association (Edpa) and find the method of beginning the Edpa program apalling. What does it mean to be an Edpa if there is no exam to measure the level of knowledge? We now have hundreds of Certified DP Auditors (CDPA) running around with no way to tell if they have six years of experience or one year six times. Moreover, the certifications committee states that the first CDPA exam will be on the order of difficulty with the certified public accountants' exam.

If this is true, how can anyone be expected to take this exam knowing that they will have no higher status than the hundreds who were grandfathered in? My suggestion is to take the Certificate in Data Processing exam. At least you will have the peace of knowing your certified peers have a minimum level of DP and auditing knowledge.

S. Walter Sauls
Fort Lauderdale, Fla.

Taylor Misguided

In response to "Do Vocational DP Schools Produce Programmers?" [CW, July 23], I question whether Alan Taylor considered Minnesota in his research on vocational DP schools.

The Area Vocational Technical Institute (Avti) system works hard to maintain the integrity of its career DP programs. Students are enrolled for approximately two years and are certainly employed as entry-level programmers in industry upon graduation.

Students who complete the first year of the course find employment as operators, often with a chance to move in to programming. This is true on a statewide level.

Speaking for my school alone, the placement rate for programmer and operator graduates is close to 100%, depending on the program in which the student was enrolled. Our students are definitely not employed "somewhere in DP." They are employed as programmers and operators.

I am wondering just how many schools Taylor checked into before printing this report. It does a great deal of damage to the reputation that vocational schools are trying to build.

Avti has an excellent reputation in the Twin Cities metropolitan area. I would hate to see some potential employer refuse to interview our students based on a misguided editorial from *Computerworld*. I hope that some kind of retraction will be printed concerning this article.

Cynthia Roos
White Bear Lake, Minn.

Loaves and Fishes

A correction to the June 25 Page 2 correction is in order. Your simile about the "parable of the loaves and fish" is inappropriate to describe the "multiplication of Cleveland's financial problems."

First, a close look at the "parable," found in God's word, in Matthew 14:13-21; Mark 6:31-44; and Luke 9:10-17, will reveal that this is not a parable at all but an actual event in the life of Christ. A parable is a symbolic story to teach a lesson with deep meaning, not a real, historic event.

Second, the event was a supernatural intervention of God to produce the miracle of multiplying the loaves and fishes, described in the gospels — quite unlike the *Computerworld* error, which was totally man-made.

Why not stick to DP and leave the theology to theologians?

Rev. David M. Caranci

HUMAN CONNECTION/Jack Stone

DP Leaders Gaining in Maturity, Wisdom

The recent series of articles on "Leadership in America" in the Aug. 6 *Time* magazine was inspiring. But one aspect about the series was saddening, and that had to do with the issue's special section entitled "50 Faces for America's Future."

Time's editors solicited suggestions from prominent citizens throughout the country, seeking "figures of integrity who have exerted a significant social or civic impact, regardless of politics or ideology . . . those who are not technicians . . . and have large souls and a sense of values . . . whose effect upon the society was — and will be — more tangible and direct . . . All those on the list share one characteristic, the sense of boldness that remains the prime prerequisite for leadership in any era."

I combed through the 50 bios and found exactly one person on the list who is directly connected with computing systems. He is Richard Viguerie, and he runs a direct mail application on two IBM mainframes for the purpose of soliciting political contributions and influencing Capitol Hill legislators.

Nothing against Viguerie or direct mail, but I am greatly disappointed — and I would think you are, too — to learn our leading citizens don't attach more significance to the contribution of DP'ers to the recent development of American society. The reason for this is that we are perceived by society at large as technicians who don't have "large souls and a sense of values" and whose impact on society is largely negative.

So, based on my beliefs and those of others, I am using this week's column to discuss the current status of DP management leadership and where it's headed. Next week's column will address what we can do to help change the negative perception of our leadership through improved communications.

Two Leadership Styles

The leadership style of DP managers seems to evolve through two major phases. The first phase is what I will term the "project manager" phase. The styles of management may apply at any level, from first-line supervisor to manager of the DP department.

The style of the project manager is generally autocratic. The emphasis is on technical matters, not on such issues of human concern as the handling of employees, external communications and documentation.

The following he attracts is attributable to his superior technical knowledge and his professionalism and not so much a comfortable and likable personality.

The project manager is usually consumed with the challenge of getting one job done at a time and done right; as a result, this manager becomes deeply involved with project detail. In critical situations, this type of leader may temporarily step down from a managerial slot to solve a tough technical problem.

As project managers mature (or is it age?), their somewhat rigid ways seem to mellow, and they evolve into what I term the "program manager." The program manager takes a broader view of his responsibilities and allocates a substantial amount of time for external relations, personnel administration and control of resources, in addition to the technical job to be accomplished.

(Continued on Page 30)

WHITE HAT/BLACK HAT/Herb Grosch

UK Management Renews One's Faith

My wife and I recently returned from one of the most pleasant and encouraging management meetings I've attended in a long time. It made me feel good about Britain, about large corporations and about rational management — and this at a time when ugly suspicions of double-dealing, or at least of amazing shortsightedness, and clear signs of greed and ugliness are so prevalent at home.

We were the guests of the British Gas Corp. (BGC), which is the huge national corporation supplying gas appliances throughout Great Britain. Some idea of its size can be gained by looking at its people: it employs twice as many as Pacific Gas and Electric and Con Edison combined. And it is of course deeply involved with the past, current and especially future supplies of North Sea gas.

The entire senior management of the corporation, including headquarters and 12 regional branches, met in Birmingham for two and a half full days to focus on planning and management services — aimed at tens of millions of customers at the consumer level and every major industry. And that meant, in every presentation and every discussion, computers: maxis, minis, micros; centralized and decentralized; engineering and business.

Like the American giants, they had seen and accepted the tremendous changes that new engineering concepts, operational research — which the British pioneered in World War II — and computing and data processing had wrought. Unlike many of our larger outfits, however, BGC has a single theme, so it can hope to plan and control and audit performance in a unified way. The Birmingham conference was a new venture for BGC, a major step in describing and coordinating the regional and central adventures.

There was the full panoply of modern conferencing: a new, large, business-oriented hotel far enough out of town to discourage wandering, triscreen rear projection facilities (adapted from much-admired IBM presentations in the U.S., cordless audience microphones. There were two blessings: no easels and no viewgraphs.

And there was something I hadn't seen before: *internal* exhibits. Around the sides of the main auditorium were booths featuring operational research, word processing, new engineering ventures and the like. These were all polished and professional, in the National Computer Conference sense, with attractive demonstrators, live terminals, movie loops — just like a commercial show. Lots of brochures, for instance, and samples!

The exhibitors represented departments of the central organization and of the regions. The booths shut down during the major papers, opened during tea breaks and after lunch and did a land office business during the workshop sessions the last day.

I was one of two outsiders present. The other was a well-known economist, chairman of the Social Science Research Council, who did social and economic futures. I did computer futures: chips with everything, optical fibers, plasma switching, distributed computing.

Executive Involvement

As you can probably tell from the tone of this article so far, I was delighted with the whole meeting. Here was an enormous company, larger by far than anything of its sort in the U.S., sending *all* of its top executives off to compare notes and exchange enthusiasms (and warnings) and look at futures. The chief executive officer, Jack Smith, came early and

(Continued on Page 32)

THE TAYLOR REPORT/Alan Taylor

Trade Languages Families Can Sprout From Forth

Forth is not particularly impressive in its own right, especially when one looks at the list of primitives that make up the standard vocabulary. In many ways, at this level it is reminiscent of early Fortran thinking, with more advanced forms of DO controls, an assumption of a particular memory structure and a mathematically based syntax.

To draw from this the conclusion that Forth is just another mathematical shorthand which is readable by a compiler would be to ignore the key difference between compiler-based languages like Fortran, Cobol and Algol and compilerless languages like Forth. Forth is an interactive language. As the Forth, Inc. publications say, "The easiest way to learn Forth is to use it. Since Forth is an interactive language, you can and should experiment with it directly at your terminal."

Unfortunately, having said this, the manuals do not elaborate on the importance of the statement, remaining simply in the mechanics of defining two-stack operations, nesting structures, etc.

The importance of its interactivity is that, in Forth-derived computer languages, testing and confirmation of small modules is easier and more complete than with the standard compiler-based languages. How often have we heard the phrase, "There is no way in which to totally test a computer program?" Here the concept is that the tests have to be applied to the complete program. That is true with Cobol, but not true with Forth-based languages.

The interactivity of the writing of the Forth-type program makes it perfectly possible to test each small module as it is written and to construct the final program out of totally tested modules. Realistically, this amount of testing cannot be done when the compiler is a separate, second phase away from the writing, which is a significant weakness of compiler-based languages.

The ability to test each module as it is being written, however, is not the only important part of the interactivity. Forth, being itself interactive, is a natural growing ground for other — interactive or not — languages, such as trade languages like those for the plastering industry, for microbiologists or for fourth grade teaching.

This is the third in a series of Taylor Reports on the Forth language. Earlier columns have stressed that Forth is primarily a hothouse in which other, newer languages can be grown for specialized use [CW, July 25] and that there are five levels of Forth to be presently considered [CW, Aug. 8].

Computer people have only begun to work with interactive languages, and how other specialists have fared from having such interactive facilities in their own computers is not well known. However, a few things are known about what happens when an area gets it own trade, interactive, language. One is that its provision of an interactive trade language will bring out the need for different levels of the language.

In an interactive language, the participants are excused from having to provide the full detail; the probability of recognizing what is meant is so high that the system can assume it, perhaps checking by asking for confirmation of the meaning.

If the confirmation is denied, the conversation then has to deal with the

(Continued on Page 30)

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Forth Allows Growth of Specialized Languages

(Continued from Page 27)

question of what happens when a terminal user is not as sophisticated as he was assumed to be.

For instance, if a gardening terminal system expects botanical precision in references to flowers and is faced with a user who wants questions about flowers answered in simpler (or more complex) terms, a different level of the system is clearly the answer.

This situation will be a normal one. In fact, a gardening terminal system would soon need to have interfaces for professional and amateur gardeners, beginning gardeners and gardening problem diagnosticians, all identifiable and all needing separate but related handling of the conversational parts of the programs.

If the programs had been written in compiler-style languages, there is a strong probability it would be impossible to fund the rewriting of the programs to handle these needs — and if they were handled, it would be done separately and without compatibility.

Not so with Forth.

In Forth, the original programming work — the development of a specialized gardening vocabulary for professional gardeners — would remain intact while the additional responses needed by the other users (the students, the amateurs and the diagnosticians) could be added by any capable user. This work would not be restricted to persons who were funded and competent to retrace the whole building process of the original professional gardening program.

I believe that there will be sufficient numbers of such capable people that it is inevitable that the pattern of spread of Forth-based trade languages will not be composed of simply adding one speciality after another — like adding a harness-making language after supermarket management, say. Instead, as soon as each speciality gets its own language, a family of related languages will be born from it.

The hotel management language will develop specialist groups for hotel accounting, hotel reception, hotel building and so on . . . and each of these languages will probably have three versions, one to teach terminal users who are not yet professionals, one for professional terminal users and one to work with superspecialists who concentrate just on troubleshooting missions beyond the ken of the normal professional.

The development of these families of languages and the speed and economy for their development when the original language is Forth-based is strength of Forth that currently cannot be matched.

DP Leaders Gaining Maturity

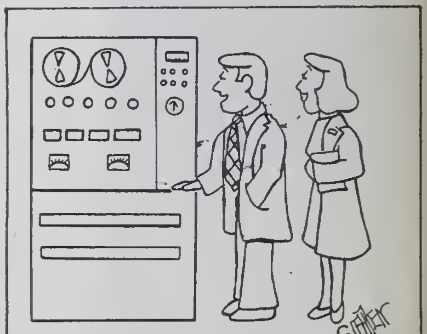
(Continued from Page 27)

As a result, he typically has broader business interests and a more democratic style of management. The program manager governs the shop, where the project manager controls it. The program manager builds leadership through an image of confidence and sincerity, rather than a knowledge of technical detail.

The program manager rarely takes a technical assignment; instead, this manager delegates a lot of responsibility, having the confidence that his employees have the competence to handle their tasks without close supervision.

Each of these management styles' effectiveness depends on the organizational circumstances. But with regard to influencing the user population — building the image of the department to encourage users to support the data processing function — there is no question that the program manager style will be more effective.

Today, in my judgment, a small but rapidly growing number of program managers are at the helm of DP departments. These people are growing in their wisdom and in their understanding that a business leader, whether in the White House or standing alongside a computer system, will build a "constituency" only when he reaches beyond specialized interests.



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READER COMMENTARY/ Robert E. Kushell

Better Management Attracts, Holds DP Talent

As the computer becomes more and more indispensable to practically every phase of industry, the need for DP professionals is skyrocketing. According to the U.S. Department of Labor, opportunities for both programmers and systems analysts are growing faster than the national average.

Although more people are entering the industry's ranks every year, companies across the board continue to report severe staff shortages. According to Dunhill Personnel Systems, Inc. recruiting offices across the country, the demand for DP people far exceeds the demand for almost any other occupation.

The current industry boom, coupled with the difficulty of finding talented professionals, has made the subject of effective mangement of computer personnel particularly timely. Top management is becoming increasingly concerned with reducing staff turnover and keeping motivation high. It simply cannot afford to lose talent.

Attracting Talent

In recent years it has become a corporate tenet that the best way to attract and hold good people is to offer them higher salaries, good benefits, stock options and a score of other rewards. Although good compensation and all the extras do, in fact, attract people to a company, it doesn't make them stay.

Turnover is just as high as it has ever been; in fact, when a new employee comes on board there is a 33% chance that within five years he will be working for someone else.

In the past 10 years, most of the studies undertaken on the subject of turnover indicate there is a large gap between what top management thinks workers want and what employees actually do want. One survey, conducted in 1969 by the Research Center of the University of Michigan, reported that 1,533 workers in a variety of occupations, not just computers, *all* ranked interesting work and authority to get the job done far ahead of good pay and job security. These findings were reconfirmed in 1973 and 1977 surveys.

This should be good news to managers who care to listen. Unfortunately, it is evident that in many cases top management not only misunderstands the needs of its employees, it fails to recognize the disparity between what it says it expects of its workers and what it actually wants from them.

The following case history illustrates the point. A Dunhill office recently placed a systems analyst in the sales administration division of a large California toy company. The personnel manager indicated that the company was in the process of computerizing its billing system to handle an increase in sales.

The individual, who was highly qualified and exceptionally talented, was told that he would have substantial input into the development of the system. He was also told that he would be given the go-ahead to take initiative and function independently.

A few months later the individual decided to leave the position.

"I don't understand why I was hired for that job," he told the recruiter who had placed him. "The initial planning for the new system was very poor and, contrary to what I was told, I had very little input into its development. We've had continuous problems with the computer hardware, and our programs are inefficient and barely adequate to the department's needs."

Giving employees double messages about their work responsibilities is a problem that can originate in the job interview. Often, the interviewer is so thrilled to locate an intelligent and articulate prospect that he may mislead the candidate (albeit not intentionally) by painting a description of the job which is not quite consistent with its real nature. Frustrated and disillusioned, the new employee is not likely to remain long with the firm.

Lack of communication between top and lower management is another common problem which can reduce

(Continued on Page 34)

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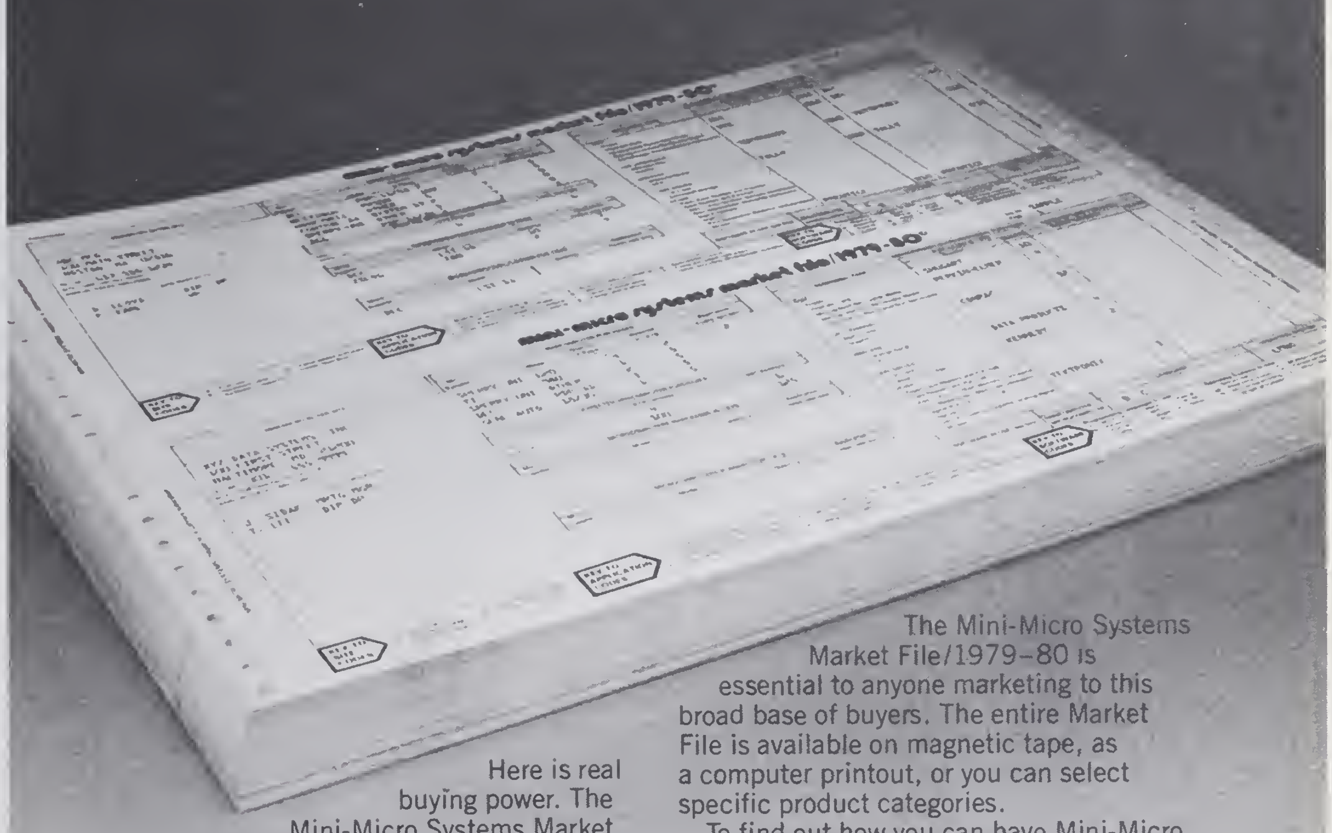

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UK Conference Renews Faith in Management

(Continued from Page 27)

stayed to the very end — did the summing up, in fact: amazing!

Carried away by the excitement, I declared myself the representative of the BGC California region and talked nearly as much as the big shots. What a wonderful opportunity! We could do computers and other high technology, in the attentive presence of the whole executive machinery of the organization.

Yes, there were times like this in the 1950s in the U.S. I can remember a dozen General Electric vice-presidents listening together to early pitches about the glories and beauties of the computer.

But a year or so ago I spoke at a top-level meeting of American Express executives, where a similar sweep and similar excitements might have been expected. Instead, they were all DP people, not the top policy men and women; the latter had delegated, not come themselves. Technology has much more to offer today, but many managements are too busy with today's bottom line to look out into the world of the future.

Polite Debate

There were vigorous arguments. The chap responsible for the conference, John Licence, BGC director of economic planning, had arranged an open meeting with lots of argument in and out of the sessions. The presence of the regional chairmen and deputies and of the top corporate management kept things quiet for only a few hours, and then debate began. All very polite and British of course: "Please don't think it too churlish of me, but . . ."

Centralization, decentralization to the regions (Scottish Gas, South East Gas and so on), functional centralization, decentralization of some functions such as customer service even further down than regions were, of course, popular themes. Another was forecasting. I made the point that, since forcasts was demonstrably impossible but had to be done anyhow, we should call poor forecasting not "erroneous" but "disappointing." Mixed applause and gentle catcalls from the audience!

Every top executive in the whole crowd seemed to be interested in networking and distributed processing. I was pressed on every side to give leads. What I said was about what I say in this country: the new economics of chip technology make every solution possible. Heap the chips up in one place and you have great maxis and a data base. Spread them out, and you can have free-standing minis and micros — one for each little function. Connect them, and you have distributed power.

But, I added, things are so complex and change so rapidly and continuously that the key to success is professionalism. And professionals are much easier to select, train, promote, reassign, replace in a big center than out in a mess of micros.

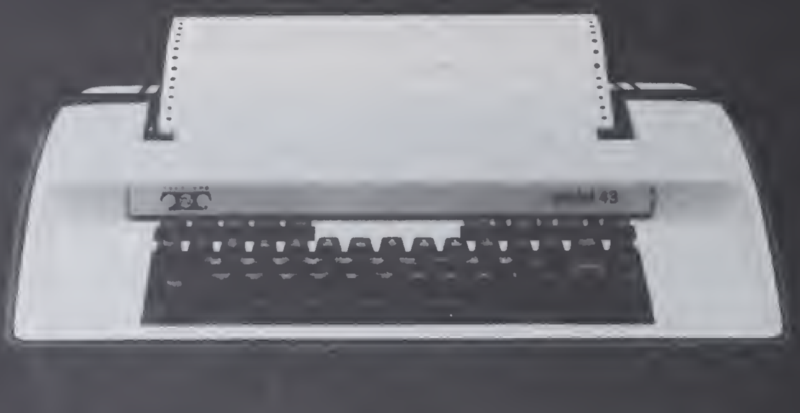
I also warned that software to tie together a generalized network of various applications and files, varied hardware and communications links and differently motivated people will not exist for many years and will cost the earth to develop and to adapt, even for a British Gas.

Some Disagreement

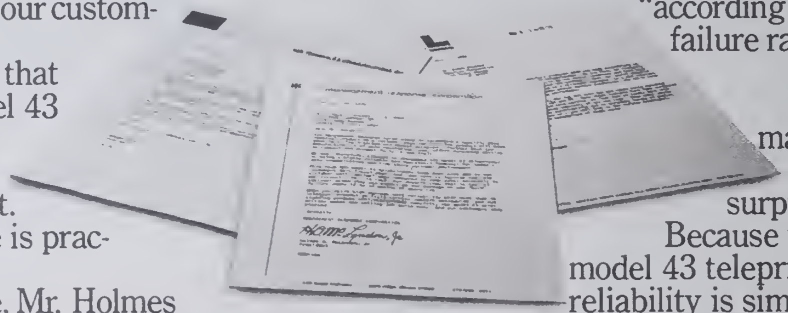
Well, there were disagreements — some obviously self-serving, others philosophical and even moralistic (What is good for our customers? What is good for employees who might be made redundant?). But there certainly was agreement on two things: the conference concept was a great one, and top management had supported it beautifully.

I told stories about the GE Association Island management meetings, so vigorously satirized in Kurt Vonnegut's *Player Piano*. We had two banquets and an address by the respected engineer who is chairman of BGC and a major interface with the government. We had formal toasts, but we were not far enough north to pipe the haggis!

One thing I brought away from England, and especially from Birmingham, though, was renewed confidence in the ability of a large organization to cope with change. Or rather, *two* large organizations: British Gas and Great Britain.



IT'S HARD TO KEEP A GOOD MACHINE DOWN.



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READER COMMENTARY/ Samir S. Shah

System Survivability Depends on Address Bits

When looking at very complex situations and trying to analyze them, we sometimes ignore the basic underlying principle that governs that situation. It is my opinion that we are ignoring a very basic principle that governs the computing systems being introduced now and those that will be introduced through the 1980s.

When comparing different computer architectures, we are faced with a very pertinent question: How long is this architecture going to survive? For sound financial judgment, an accurate answer to this question is important.

The survivability of an architecture rests in its ability to resist obsolescence. Obsolescence occurs when a high-end architecture is announced as a continuation of an old architecture but with significant differences in such attributes as the instruction set, address capability, etc.

As an example, the Digital Equipment Corp. VAX-11/70 caused the obsolescence of PDP-11 architecture through a completely new instruction set, 32-bit addressing scheme and many other architectural attributes. Architectural obsolescence should not be confused with commercial obsolescence; computer systems continue to sell a long time after they are architecturally obsolete.

The basic principle that I want to propose is called "the principle of survivability of computer systems." It states, "The survivability of any computer architecture through the 1980s is directly proportional to the number of address bits the architecture has."

This principle is a consequence of the single-level memory operating system, which was developed because of the need for effective management of memory hierarchy (cache, main, bubble, disk, archive). Memory management has progressed from very primitive memory management systems through virtual memory systems to the single-level memory systems (IBM System/38).

A single-level memory system can manage the hierarchichal memory effectively in two ways. First, it migrates frequently used programs and data to the faster memory, thus decreasing response time and increasing performance. If an editor is used very heavily, it will remain in main memory for the period of heavy use, then automatically migrate to the bubble system and to disk, which have increasingly slower access times than main memory. Secondly, an increase in memory at any level will automatically increase performance as more data and programs can be kept at that level.

But because a single-level memory system maps every memory into its address space, the address space should be enough to cover all disk and archival capacity, which can be very large. These systems require an address space of 32 bits or more to be practical; this is the reason why the IBM System/38 has 48 bits of address space.

The IBM 370 has a 24-bit address and is not appropriate for this purpose. Also, its memory limitations have been felt recently.

Series H Architecture

The Series H architecture should address some of these problems and should not be compatible with 370 architecture, though it might have a compatibility feature. It should offer an address space with somewhere between 64 to 128 bits (this disagrees with the June 4 *Computerworld* article which said it will be 32 bits). It should also offer a single-level memory operating system and another level in memory hierarchy, namely bubbles.

Realizing that a larger addressing capability is a must through the '80s, the demand for systems like the VAX-11 and System/38 will far outpace the supply, creating an opportunity for other manufacturers to introduce systems.

Shah is a graduate student at Cleveland's Case Western Reserve University, where he also works in the computer center.

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Better Management: Key to Retaining Talent

(Continued from Page 31)

morale and increase turnover. When top management's door is closed, many people get the feeling they are working in a vacuum. They may read news about their own firm in the *Wall Street Journal* before they hear it from the company president.

This kind of communication is particularly important for computer people who spend their days involved with technical information and systems. Getting a sense of the overall picture and of company goals can be an important morale booster.

In addition, management should let employees at all levels know that it is receptive to creative ideas that will improve output and streamline the efficiency of a system.

Another difficulty that frequently arises within companies is that people end up in jobs for which they aren't suited. Thus, the talented programmer is promoted to department head, a position which requires administrative rather than programming skills. The talented programmer sadly discovers that he was not meant to do paperwork, and work performance falls off.

Sometimes, too, personnel difficulties arise from problems within the departmental reporting system. For example, a highly motivated performer reporting to a less efficient manager is likely to become quickly frustrated.

In general, marginal employees in key positions can weaken and demoralize an entire company. On the other hand, some marginal employees can turn into good performers if top management offers sufficient challenge and feedback.

A few guidelines on how to reduce turnover would certainly include the following thoughts: always keep employees informed on company matters; set up clear channels of communication between employees and top management; encourage employee creativity and try to keep work as challenging as possible; encourage self-improvement and point out opportunities for advancement; and finally, never oversell a candidate in the employment interview.

In addition, it is essential for management to define an employee's job and the expected results both through a written job description and frequent personal review sessions. Specific benchmarks for measuring success must be established so that both the employee and the supervisor will agree on what constitutes a good job.

The team approach to problem solving is another effective management tool. By involving an entire department in strategy and planning sessions, a manager can increase staff motivation to carry out new programs.

In addition, these kinds of strategy sessions can also provide unexpected solutions to long-standing problems. In fact, it is usually the people who work directly with a particular system, rather than the administrator in charge, who are best equipped to work out its bugs.

Morale Booster

The in-house newsletter is also a tremendous morale booster, and it doesn't have to be filled with gossip. The best company newsletters are read by employees in the same manner that professionals read trade journals — for information.

Reducing turnover and increasing motivation aren't difficult if top management asks itself certain basic questions: What kinds of people leave the company? Is it only the marginal employees, or is it really the top performers? What are the differences between those that survive in the company and those that do not?

If the answers to these questions indicate that most often it is the talented employees who are leaving, it's time for an in-depth reappraisal of the working climate. By paying attention to what it is that employees really want — instead of what management thinks they want — executives can reduce turnover, improve morale and create a more effective, productive working environment.

Kushell is president of Dunhill Personnel Systems, Inc.

READER COMMENTARY/ Robert L. LaFara

Programming Should Not Be Based on Tricks

I applaud R.A. Cornish's skill in developing the TGIF algorithms [CW, June 4] and enjoyed determining how they work in much the same manner that I enjoy working other puzzles.

However, a puzzle should not be suggested to be used as part of a program. This type of algorithm is a prime example of the type of programming that we should try to avoid because it depends on "tricks."

Cornish has discovered some interesting "facts." For example, if we represent each month number by a 4-bit binary number, then those months where the first and last bits are different are the months that have 31 days. It is incredible (maybe even diabolical) that anyone would use such a fact in a program.

Without extensive documentation, such a program is nearly impossible to understand.

It was implied that these algorithms are especially efficient in the use of computer memory. I seriously question that implication. I suggest the following methods which do not require much space and will result in a less obscure program.

In place of Algorithms 1, 2 and 3, use a table lookup. Only 12 memory locations are required to store the day number of the first day of each month for nonleap years. A test to see if the year is a leap year and a test to see if the month is March or later will determine if a day needs to be added. The same table can be used to convert from mo/day to day-of-year and also to convert from day-of-year to mo/day.

To find the day of the week may be a little more complex. If the program only needs to do this over a short span of years, then a table giving day-of-week for Jan. 1 of each year can be used in conjuction with day-of-year to find the day-of-week.

If a long span of years is involved, it may be more efficient to use Zeller's congruence. (See *Problems for Computer Solution*, Fred Gruenberger and George Jaffray, John Wiley & Sns, Inc. 1965, p. 255.) Although Zeller's congruence depends on certain "tricky" relations between the variables, it is a known method and can be documented with the simple statement: "THE FOLLOWING CODE IMPLEMENTS ZELLER'S CONGRUENCE FOR DETERMINING DAY-OF-WEEK."

For the interest of persons not familiar with Zeller's congruence, it is: f=[(2.6m-0.2)+k+D+(D/4)+(C/4)-2C] mod 7, where m is month (March is 1, April is 2, and so on, and January and February are 11 and 12 of the previous year), k is the day of the month, D is the year of the century, and C is the century. Square brackets indicate "greatest integer in" and mod 7 means find the remainder after dividing by 7.

For example, on what day of the week will Jan. 1, 1980 occur?

m=11, k=1, C=19, D=79

f=[(28.4)+1+79+(19.75)+(4.75)-38] mod 7

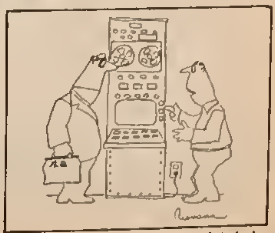
f=[28+1+79+19+4-38] mod 7

f=[93] mod 7

f=2

The days are numbered: Sunday=0, and so on. Therefore, 2 is Tuesday. If the computer being used allows only integer arithmetic, the expression (2.6m-0.2) can be implemented as [(26m-2)/10].

LaFara is with the Naval Avionics Center in Indianapolis, Ind.



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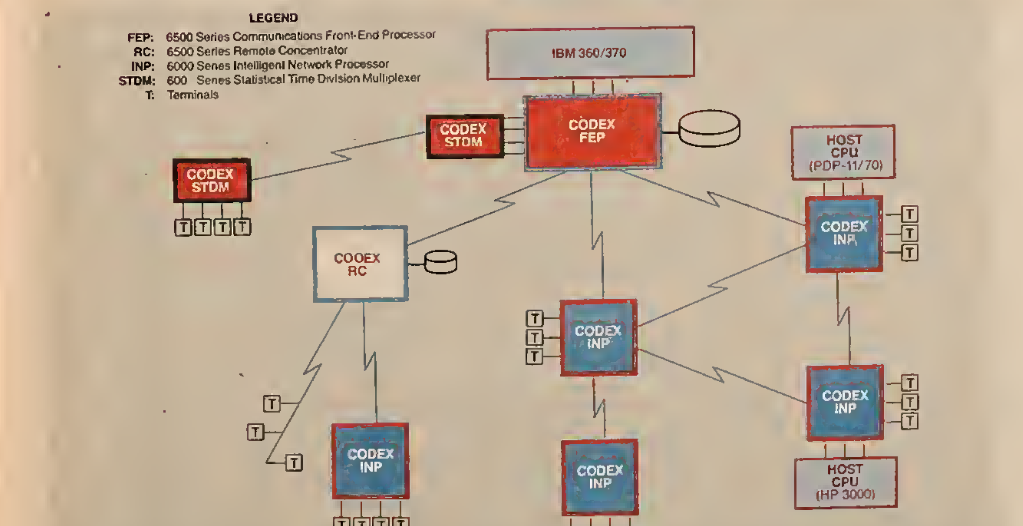
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Service Lets Users Rate DP Support

DARIEN, Conn. — The Performance Appraisal Reporting Service (Pars) introduced recently by Mathews & Co. enables end-user departments to rate their DP services on a standardized and therefore, hopefully, objective form.

Filled in monthly, these forms provide a five-point scale for rating each of eight categories — accuracy of reports; timeliness of reports; distribution of reports; meeting implementation schedules; on-line availability; response time; solution of problems; and attitude and cooperativeness.

Taken individually, the forms enable each department to monitor how well it feels it has been served over time. Taken collectively, they provide upper management with insight into how well the DP operation, whether an in-house function or one under a facilities manager, is doing.

But Pars goes one step further. It is a subscription service geared to the sharing of performance results between member organizations.

This could be beneficial in two different ways, according to a spokesman. First, "public" exposure of how well a DP operation is performing should encourage it to do the very best it can. Second, if any pattern of equipment problems begins to show up, the equipment vendor should be interested in resolving the problem and clearing the record.

While an end-user department can use any of the five points along the scale to rate a category, the reporter must justify the use of either the two highest or the two lowest grades with a written comment. That should bring problems out in the open, on the one hand, and allow for unembarrassed compliments on the other, Mathews noted.

Since Mathews is generally a consultant to banks, Pars has been presented as a service to the financial industry. However, there appears to be little if anything in the concept or the form that would preclude its use by other industries.

There is a $75 fee to set up a Pars user on the system. It costs $500 to subscribe for 12 months to rate an in-house or an outside service, or $650/year if both types of service are to be rated.

Each subscribing organization gets an initial supply of the rating forms, a user's manual, three comparative performance reports per month and a binder for the reports.

Mathews can be reached at P.O. Box 2064, Darien, Conn. 06820.

Univac Users Gain 'Quikjob' Version

DAYTON, Ohio — A version of Quikjob III, the data management and report writer system from System Support Software, Inc., is now available for Univac 90 series systems running under OS/3.

In addition to supporting all the features available in the IBM 360/370-oriented version of Quikjob, the OS/3 version supports Isam in "native" mode and the rewriting of sequential disk files, according to a spokesman.

The Univac-oriented release allows four input and four output files. It also supports OPEN and CLOSE verbs so users can control how files are used. These features will be in the next release of the IBM version of Quikjob III, the spokesman noted.

The optional sort feature in the IBM version will be made available to Univac users later this year, he added.

The OS/3 version costs $5,445, the spokesman reported from 5230 Springboro Pike, Dayton, Ohio 45439.

DP Training Plan Grows

PHILADELPHIA — The EDP Education Program (Edpep) of cooperatively planned and funded DP training, which started six years ago at Babson College outside Boston and expanded two years ago to include a center at Fairleigh Dickinson University in northern New Jersey, has expanded again.

Starting next month, courses under the Edpep banner will be offered at Drexel University facilities here, with instructors provided by QED Information Sciences, Inc. of Wellesley, Mass., and with attendees from a number of participating firms in this area.

Enough firms are currently enrolled in the new venture to ensure its viability and to add flexibility to the entire Edpep approach, according to a QED spokesman. Nevertheless, he added, there is room for more participants and the insights they can bring to the program.

Firms that become members of Edpep gain several advantages, he said, citing as the most basic benefit guaranteed seating in a minimum number of courses and at a reduced cost per student seat. But members also join the coordinating council that sets the curriculum for the particular Edpep center, the spokesman noted.

The geographic growth of the program has provided still other benefits to members and nonmembers alike, he continued. Firms that are members of one Edpep center can send employees to courses at any of the centers. This can be significant in the event, for example, that an employee is transferred to another city just before he is scheduled to take a course at the firm's "home" Edpep center.

The courses, generally but not always advanced in the material they cover, have been so successful that nonmember firms can now enroll their employees in the training on a space-available basis, the spokesman said. The program's success has also enabled QED and the associated universities to offer "satellite" courses that are not part of the planned Edpep curriculum but are seen as useful adjuncts to it and are open to anyone, he added.

More information about Edpep is available from QED at 141 Linden St., Wellesley, Mass. 02181.

Solar Simulations Sought

GOLDEN, Colo. — The U.S. Department of Energy's Solar Energy Research Institute (Seri) is collecting descriptions of computer-based modeling runs or simulations with solar energy applications and has invited developers or distributors to report what they have available.

The descriptions are being stored in a data base that, in time, will be available on-line to the Department of Energy and its contractors, state energy offices, regional solar offices and "the interested public," a spokeswoman explained.

The base will include information on access to models, types of models, required input/expected output, developers, cost, hardware/software environments and uses of the system, she said.

Until the on-line system is ready, she added, Seri will distribute a printed version of the information it has available.

Seri emphasized it "will not attempt to validate the models or simulations, and inclusion in the data base will not constitute an endorsement of the model described."

More information about how model information should be submitted or how copies of the data base can be attained is available from Seri's Solar Energy Information Data Bank, 1536 Cole Blvd., Golden, Colo. 80401.

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Independent Package Eases Editors' Vsam Use

WASHINGTON, D.C. — The Kiplinger Washington Editors operates an important text-editing application on its IBM 370/158 running under VS1. The system, which uses CICS, was developed in-house and makes extensive use of Vsam.

Until recently, the Vsam data sets presented significant maintenance problems which affected the usefulness of the application. The systems programming staff found that using IBM's Access Method Services (AMS) for backing up and/or maintaining Vsam data sets was a difficult procedure, prone to error, and was usually avoided unless (and until) absolutely necessary.

Recently, however, the company acquired the Vsam-Assist package from Softworks, Inc., based in Clinton, Md., and reported it now maintains Vsam data sets as efficiently as any other data sets.

Vsam-Based Text Editor

The text-editing system was developed to handle reply correspondence using tailored but computer-generated letters. More than 1,000 letters are produced each week from more than 250 letter formats. Each of the "skeleton" letters is a separate Vsam data set.

Additionally, the system is used to produce and maintain Kiplinger's internal documentation, which accounts for an additional 200 Vsam data sets. The data sets occupy more than 3,000 tracks of IBM 3330 space and are spread over several spindles.

According to the systems programmers, AMS provides no reasonable facilities for backing up 15 — much less 500 — data sets. Repro, Export and Import move only individual data sets and thus, as backup/recovery vehicles, are cumbersome for small numbers of data sets and totally impractical for large numbers of data sets.

The volumes containing the Vsam data sets are backed up on a daily basis, but to recover an individual Vsam data set meant restoring the entire volume (producing a duplicate volser), re-IPLing the system, copying the data set to a work area, re-IPLing with the original volume and then DEFINEing and REPROing the data set into the Vsam data space.

Because of the inconvenience and time required, the procedure took place infrequently, often leaving users without some files for several days and inducing them to keep multiple copies of the files they were working on, dramatically increasing DASD space requirements for the system.

Also, because of changes in user responsibilities, the data set names and passwords of whole groups of data sets occasionally had to be changed. If only one user was reassigned, it meant running AMS perhaps 75 times.

Vsam-Assist, on the other hand, was specifically designed to back up, restore, rename or modify the characteristics of large numbers of Vsam data sets. A single command will back up one or more data sets by data set name, by partial name, by volume or by catalog.

Any or all data sets can be restored from the backup file by the same types of criteria. When restoring, the user can change data set names, space allocations, control interval sizes and many other data set characteristics.

Backup Time Slashed

Even when simple to specify, the computer time required to back up 500 data sets was considered excessive, so the "archiving" facility of Vsam-Assist was used to dramatically reduce the resources required. The archiving function "merges" the data sets being backed up with a previous backup file. Only new data sets and data sets modified since the previous backup are exported — unmodified data sets are simply copied (tape to tape) to the new backup files.

Because only a small fraction of the data sets are modified in any given day, with the merge function the backup time was reduced from approximately two hours to about 10 minutes. An added benefit is that if a data set is deleted, its copy on the previous backup files will be carried over to future backup files.

Thus, when the users are finished working on a particular data set, it is deleted, freeing up the space it occupied. When needed, any data set can be recovered from the latest backup file. The Vsam data space is used for "staging up" data sets from the backup file, not storing them.

Because Vsam-Assist requires no detailed knowledge of Vsam data set or catalog structure, the procedure of recovering data sets from the backup file is greatly simplified.

DASD Space Savings

Staff members indicated that substantial savings of DASD space have been realized by using Vsam-Assist to make mass changes to space allocations, eliminate split control intervals, normalize free space percentages and localize data set extents.

Because of the increased recoverability of the Vsam data, the installation now operates without catalog recovery processing, significantly reducing the overhead associated with catalog processing.

Finally, a systems programmer for Kiplinger noted that many maintenance functions that were never done (such as moving entire catalogs, data spaces and their associated data sets to different volumes or device types) because of the difficulty of performing them with AMS are now routinely scheduled.

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On-Line Bookkeeping Logic Runs on TI Terminal Units

RALEIGH, N.C. — The BAS Bookkeeping System from Business Application Systems, Inc. is a five-module package designed to help small businesses with their inventory, general ledger, accounts receivable, accounts payable and payroll functions.

Intended for first-time users working with Texas Instruments, Inc. Model 771, 774 and DS990 Model 1 intelligent terminal systems, the package is controlled by selections from menu screens; input is guided by prompting messages.

Even though the application areas are organized modularly, the system provides an integrated approach to bookkeeping, according to a spokesman. For example, he said, when a piece of merchandise is shipped, the package updates inventory and sales figures, computes taxes and adds freight charges, computes the total price, prints the invoice including total due and posts the transaction to the proper accounts in the general ledger.

The payroll subsystem complements but is not integrated with the others. Since it is intended to support small organizations, it provides services for up to 400 employees within a single state.

The Earned Income Credit (EIC) facility now mandated by the federal government will be incorporated into the payroll system "as soon as we can get good, definitive information on how it is to be applied," he said, addressing another question of concern to payroll departments.

Business Application Systems normally sells the bookkeeping system software with the TI hardware, but software by itself is available for those who have the appropriate equipment.

A turnkey system — including a TI771 and a Model 810B printer — costs $12,500. The 771-oriented software by itself costs $2,500 plus installation support, which generally amounts to two days, the spokesman said from 7334 Chapel Hill Road, Raleigh, N.C. 27607.

Financial Work Uses NCR Gear

BARRE, Vt. — Interactive financial accounting packages are available from Systems Support, Inc. for use on NCR Corp. I-8130, 8150 and 8200 systems running with NCR's Interactive Direct Processing Software (IDPS) and the Imos III operating system.

Written in ANS Cobol 74, the applications covered include billing and accounts receivable; accounts payable; general ledger; inventory control; and payroll. Packages supporting job costing and sales analysis are expected to be released soon, a spokesman said.

Optional ledger card handling and multicompany processing support are available for most of the packages, he added.

The billing programs support open item or balance forward accounting, with or without order processing. The payroll package was designed for companies with employees operating in and under the tax jurisdiction of only one state, but it can be easily changed to handle multiple states, the spokesman reported.

Since the company makes source code for any given program available for a $100 fee in addition to the cost of the object code, users who wish to adapt the logic to their needs can do so very easily, he noted.

The programs require a minimum of 64K bytes of main memory and 1M byte of flexible disk storage. Object code for the payroll package costs $1,000 for I-8130 and 8150 users and $1,200 for I-8200 sites. Each of the other current packages cost $800 for the small sites and $1,000 for the 8200 environment.

Systems Support, Inc. can be reached at P.O. Box 205, Barre, Vt. 05641.

Medical Billing Handled

SACRAMENTO, Calif. — The Data Systems Group has developed a multi-terminal, interactive Medical Financial System which runs on Datapoint Corp. 1800 and larger CPUs under Datashare time-sharing.

Components in the system include both private patient and insurance billing using Superbill; Medicaid and Medicare billing using the Uniform Claim Form; and accounts receivable, credit management and financial reports for doctors and group practices, according to a spokesman.

On-line functions include alpha search for patient records and automatic insurance write-off capabilities, he added.

Several versions of the system, which was written in Databus and ANS Cobol, are available. System I supports one terminal and 2,000 to 10,000 patients.

System II provides a Datashare environment, supporting up to four additional terminals or remote communications devices. System III is intended for larger group practices, clinics, laboratories and X-ray offices; it has a minimum of two and a maximum of 16 on-line terminals.

Complete hardware/software systems range in cost from $20,750 for a standard System I configuration to $25,350 for a minimum System II and $35,950 for a System III, the firm said from 2322 Capitol Ave., Sacramento, Calif. 95816.

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Bowne Links Legal WP Units, Network's 370s

NEW YORK — Bowne Information Systems has extended its support of legal work in two directions. One augments the capabilities of word processing (WP) systems; the other provides litigation support tailored to smaller organizations.

The so-called Bowne Connection, the first of the enhancements, interfaces WP machines in the client's office or offices with a pair of IBM 370/155s driving legal text software at Bowne's data center.

That linkage enables the user at the WP unit to handle more applications than when the machine is used in stand-alone mode, a spokesman said. Photocomposition, creation and access to large computer-based files and support for electronic message service are among the possibilities, he added.

All that is required for the Bowne Connection, he asserted, is a communicating version of a word processor from Lanier Business Products, Lexitron Corp., Xerox, Vydec, Inc., CPT Corp. or IBM "and an ordinary telephone."

Litigation Support

The second offering from Bowne is a tailored version of a general litigation support system. The packaged service includes standard file and forms design, input and retrieval procedures; a fixed amount of Bowne's computer resource and special software usage; and both training and on-site equipment to meet the requirements of supporting litigations in the 1,000- to 10,000-document range.

Because the front end is standardized, the cost of implementing the system is substantially reduced and the cost of using it can be predicted, he said.

The tailored software utilizes Bowne's on-line information storage and retrieval system, which provides immediate data entry and research activities through communicating typewriters at client offices linked into the Bowne remote computer service network, the spokesman continued.

The customized litigation support for the smaller firms costs $2,500 plus a monthly fee based on estimated usage.

Bowne Information Systems is at 160 Water St., New York, N.Y. 10038.

Data Base Courses Offered

VERNON, Conn. — Five seminars, each dealing with a different aspect of working with IBM's IMS data base management system, will be offered in the Washington, D.C., area by Data Base Management, Inc.

The three-day "Introduction to IMS-DL/1" is intended for programmers just getting involved with data base work. It will be presented Sept. 17-19 and again Nov. 5-7. The registration fee is $375.

The seminar entitled "Introduction to IMS/DC" was designed for programmers who have some background in data base work but are just entering data communications. This two-day course will be given Sept. 19-20 and Nov. 8-9; the registration fee is $250. Carrying a $375 registration fee, this course will be given Sept. 24-26 and Nov. 14-16.

The company's third seminar will focus on "IMS Message Format Services."

Fourth on Data Base Management's schedule is a one-day session on "IMS Dump Reading." This $125 course is set for Sept. 27 and Nov. 19.

Lasting five days, the "IMS Data Base Design" seminar will be geared to application designers who need to know more about the options open to them and the possible impact of those options on system performance. This $575 training will run Oct. 15-19 and again Dec. 3-7.

More information about these public seminars is available from Data Base Management, Inc., 281 Hartford Tnpk., Vernon, Conn. 06066.

Diskette Used For W2 Reports

CHATTANOOGA, Tenn. — A software package for diskette-based reporting of annual W2-type payroll information to the Social Security Administration has been announced by Computer Software Services, Inc. (CSSI).

It serves as a follow-on operation for either DP-based or manual payroll accounting as long as the earlier system provides a machine-readable file of information for the W2 reports.

The package provides conventional, printed W2 forms for employee, employer and state use and a diskette formatted with W2 information for federal reporting. Reporting on magnetic media is preferred by the federal agency, a CSSI spokesman claimed.

The package is available in two versions. One was designed to run on IBM System/34 and System/32 equipment making use of the DFU utility for file maintenance. The other version operates on the IBM System/3.

The programs in the package are written in RPG-II and all run in less than 16K bytes of main memory. The System 32/System 34 implementation costs $125; the System/3 package, $150.

CSSI is at Suite 2903, 6000 Building, Chattanooga, Tenn. 37411.

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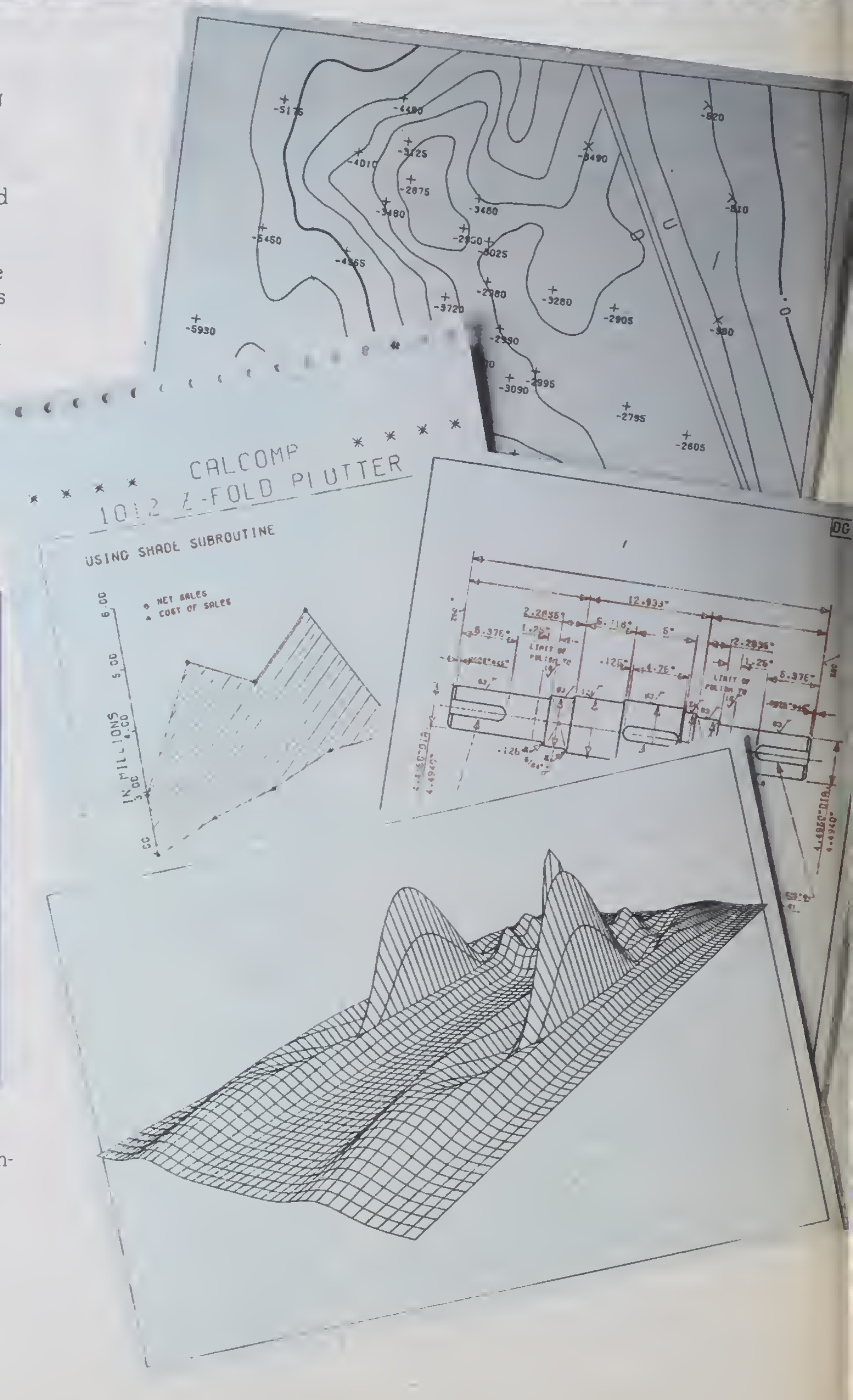

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Service Work Tracked

HARBOR CITY, Calif. — The Fast Identification and Routing of Engineers to Service (Fires) software package from Integral Business Computing, Inc. (IBC) runs under Data General Corp.'s RDOS operating system and supports companies that dispatch service personnel to on-site customer locations.

Service contracts are typically handled on a monthly maintenance fee or on a time-and-materials basis. Fires can be used with either approach, a spokesman said.

The system tracks and reports parts based on serial numbers, when appropriate. Its primary functions include service dispatching, billing, product analysis, cost accumulation, parts requisition and management-oriented analyses and reports, he added.

IBC is offering Fires as a customized system. A total package may include, for example, sales of business machines and supplies, order processing, sales analysis and invoicing and accounts receivable.

Beyond that, procurement control, payroll, accounts payable and general ledger modules are also available, the spokesman noted.

The actual cost of a Fires installation would vary with the amount of custom work required, but the company estimated a typical system, with a reasonable tailoring effort, would fall in the $100,000 range.

IBC is at 1440 W. Pacific Coast Highway, Harbor City, Calif. 90710.

Software Update Enhances Kurzweil OCR Machine

CAMBRIDGE, Mass. — Software enhancements just announced by Kurzweil Computer Products, Inc. are said to increase both the flexibility and capability of the Kurzweil Data Entry Machine (Kdem), an optical character recognition (OCR) system.

Already capable of "reading" multiple type fonts and converting them to computer-compatible form, the system now offers an expanded font storage capacity, automatic detection of paragraphs, preservation of font changes and preservation of horizontal spacing, a spokesman said.

Other enhancements provided in the current software release include recognition of true superscripts, a more versatile output routine and optional support for the use of two terminals for edit-intensive applications, he added.

With increased storage capacity, "training" on the fonts used in 25 different jobs can be on-line. The user can also train the system to recognize unique symbols and assign two- to three-character mnemonics.

Recognition of paragraphs can be triggered by the appearance of extra vertical space, horizontal indentation or both, the spokesman continued. With one keystroke, an operator can insert or delete paragraph notations during the data entry/editing process, he said.

The output routine enables the user to tailor the output to the specific job needs through a series of questions and answers on the CRT. The system will output to an RS-232 interface or to magnetic tape, the company indicated.

Output to magnetic tape can be in either Ascii or Ebcdic form and can have either fixed or variable-length records or blocks. The operator can include self-defined characters to control spacing, pagination and other formatting concerns.

The two-terminal option allows an installation to use a secondary terminal, for editing only, in addition to the primary unit which handles both scanning and editing.

The enhancements are being distributed to all users who are current on their $600/mo maintenance fee, Kurzweil said from 33 Cambridge Parkway, Cambridge, Mass. 02142.

NCR Supports Distributors

DAYTON, Ohio — NCR Corp. has introduced the Interactive Technique for Effective Management (Item) series of programs for the wholesale distribution industry.

Designed to operate on the NCR I-8200 and I-8400 families of CPUs, the on-line modules include order processing, inventory control, accounts receivable, sales analysis, sales history, sales commission and purchase order processing.

The order processing, inventory control and accounts receivable modules are basic to the system, a spokesman said. The others — along with accounts payable, payroll and general ledger routines — are optional.

The Item series provides distributors with quick order entry, immediate printing of warehouse picking tickets and invoices, flexible pricing, a mass price change capability and extensive buyer's information.

The programs support direct input and immediate updating of files based on entries made at CRT terminals linked to the system.

The various modules can be implemented one at a time or as a comprehensive, integrated system. They are available for one-time fees ranging from $900 (for sales history) to $2,700 (for order processing).

The combined one-time license fee for the three basic modules is $7,200, but they can also be acquired for $160/mo, the spokesman said.

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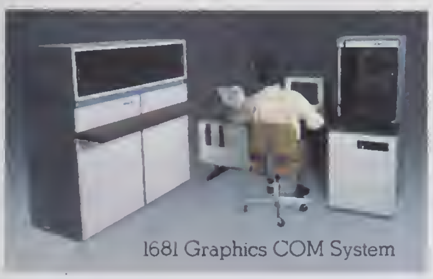
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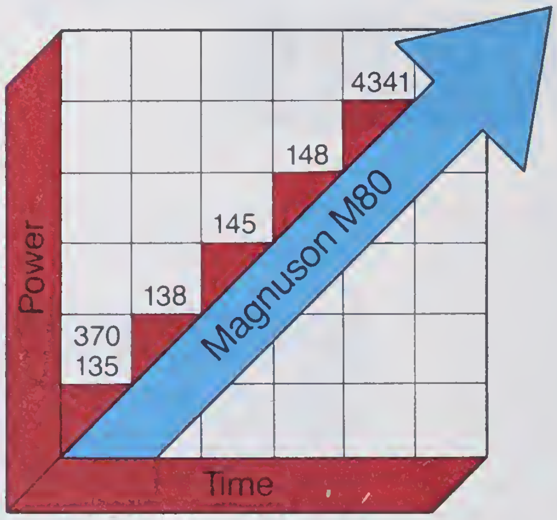

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'Pretty Ambitious Program'

Software Physics Credited for Easing Upgrade

STAMFORD, Conn. — Workload forecasting and hardware planning is difficult enough when you know what you have to work with. Consider the challenge it would be if you had to deal with application and business systems software that wasn't even written yet.

GE Credit Corp. (GECC) a subsidiary of General Electric that handles consumer, commercial and industrial financing, is facing exactly this problem. Headquartered here, the company is implementing a comprehensive system upgrade from second-generation equipment to current-generation hardware and state-of-the-art data base management technology.

"It's a pretty ambitious program we're on right now," commented Edward R. Hoffman, manager of systems resource development. His group is responsible for resource utilization reporting, performance evaluation and hardware planning for Gecc.

Currently using a Honeywell, Inc. DPS Level 3 at corporate headquarters to execute 10,000 batch jobs and 400,000 on-line transactions a week plus time-sharing, Gecc expects to double the transaction workload within a year and has ordered a Honeywell DPS Level 2 to accommodate this growth. Three other regional service centers are using multiple Honeywell G-400 computers and will migrate to Honeywell Level 6 minicomputers for remote job entry to corporate headquarters.

'Really Intrigued'

Hoffman first became interested in software physics after a 1976 hardware monitoring conference in Washington, D.C., when Ken Kolence, president of the Institute for Software Engineering, presented a discussion on the subject.

Software physics is the theory used to develop and integrate the technical and managerial engineering practices required to attain standard units for the fundamental properties of software work, software power and storage capacity. Derived from existing computer measurements, these vectors are used to explain and adequately predict system properties and behavior.

"Because my undergraduate degree is in physics, I was really intrigued with the use of natural physics as the basis of computer performance evaluation and analysis," Hoffman said. Further discussions resulted in the GE Corporate Computer Planning Operation becoming an institute member in 1977. Gecc joined in early 1978.

"When I took the job of trying to do hardware planning and workload forecasting for a majority of systems that aren't even written yet, I knew I had some basic problems. I could see the concept of software work as a very useful tool to use in solving these types of problems," Hoffman explained.

Capacity Reporting

Hoffman is now in the process of putting together a capacity management reporting system for Gecc involving a data base of performance which comes from a hardware monitor, various software monitors and their statistical collection file (accounting tape). Much of the foundation of this data base is going to be from software physics.

"This is primarily because we have to know our workload characteristics — what percent of our computer is used by those jobs that are run in the batch environment, those jobs that run in time-sharing, those transactions that run in our transaction processing system and so on," Hoffman explained.

Forecasting and Planning

Workload forecasting and hardware planning for the large transition it is entering is the other major project being done by Hoffman's group. "One of the ways we use software physics is to measure the work done by the various systems as they are now run on the G-400 computer. We then extrapolate at least that amount of work that has to be done on the DPS machines.

"Then we apply an overhead factor that exists on the DPS machines because we are using data base management technology which doesn't exist on a tape-oriented 400," he explained. Rather than time, Hoffman is using the software physics work concept for this. "I'm afraid of comparing processor time on the 400 vs. processor time or channel time on the DPS because of the broad assumptions that I would have to make. On the other hand, I can directly measure the software work. That gives me a lot more comfortable feeling," he said.

Billing Unit Concept

Gecc considers its measurement system to be more advanced and equitable than most. The billing unit concept was initially developed in the mid-1960s at several GE locations. In the early '70s, these concepts were refined and expanded into a National Billing Unit (NBU).

Since then, the NBU has become not only a method of charging, but also a method of tracking resource utilization. According to the Gecc system, each mode of data processing generates NBUs, and these can be tabulated in any desired time frame.

"Our NBU is very close to the institute's software physics numbers," Hoffman noted. "The major difference is that we use time (CPU hours and channel time) in our formula while the institute uses software work. It seems to be that eventually we will modify the NBU to use software work instead of time because I think that is probably a more basic unit."

Hoffman prefers to use software physics numbers for several reasons. "It's a nicer unit to use because it's directly measurable and it's repeatably measurable. Some of the time units tend to be nonrepeatable because the mix of work going on in the machine may vary," he said. "That's the nice thing about software work, repeatability. The same charges for running the same program is of paramount importance."

CPU Capacity Quantified

Recently Hoffman has been experimenting with his system to determine a basis for his overall planning goals. Among the initial experiments were those designed to quantify CPU capacity.

"DPS is a dual processor," he emphasized. "We put one hardware monitor probe on the CPU busy signal and another on the memory reference strobe. This is strobed every time a memory reference is made, whether the reference is made to cache or main memory.

"What we get is correlation between the amount of time the processor is busy and how much information is being processed between the processor and memory," he explained. "Essentially, this is the software work.

"When we run a regression line on that data, the index of determination is above .95. We then extrapolate the line to 100% CPU busy to find our maximum capacity, or maximum power, on the system."

Our work has shown that the two CPUs are operating at an 8% difference in power level," he noted.

The difference probably arises from a combination of three effects: a slightly different average instruction mix because one processor runs more of the operating system than the other; different cache hit ratios; and different priority access to main memory.

Gecc's Systems Resource Development Group is also involved with the DP services for an insurance company that is a subsidiary of Gecc. Hoffman pointed out that the insurance company uses a different vendor's system, for which he is also responsible for the resource accounting.

"Since the NBU is strictly for Honeywell systems," he commented, "I'm obviously going to have to come up with a way to measure and report the 'work done' on the different system that this insurance company has.

"The nice thing about using software physics in the capacity management reporting system we've developed is that the units are the same units regardless of the mainframe on which they're run. I can report work on the Honeywell, an IBM or anything else we might get in the very same terminology so the data is directly comparable."

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INTERACT is an online system for program development, remote job processing, text editing and word processing. INTERACT is *the* programmer productivity system. It offers a powerful command repertoire, fast terminal response time, and economical CPU requirements. INTERACT is backed by Cullinane's responsive worldwide network of technical support centers.

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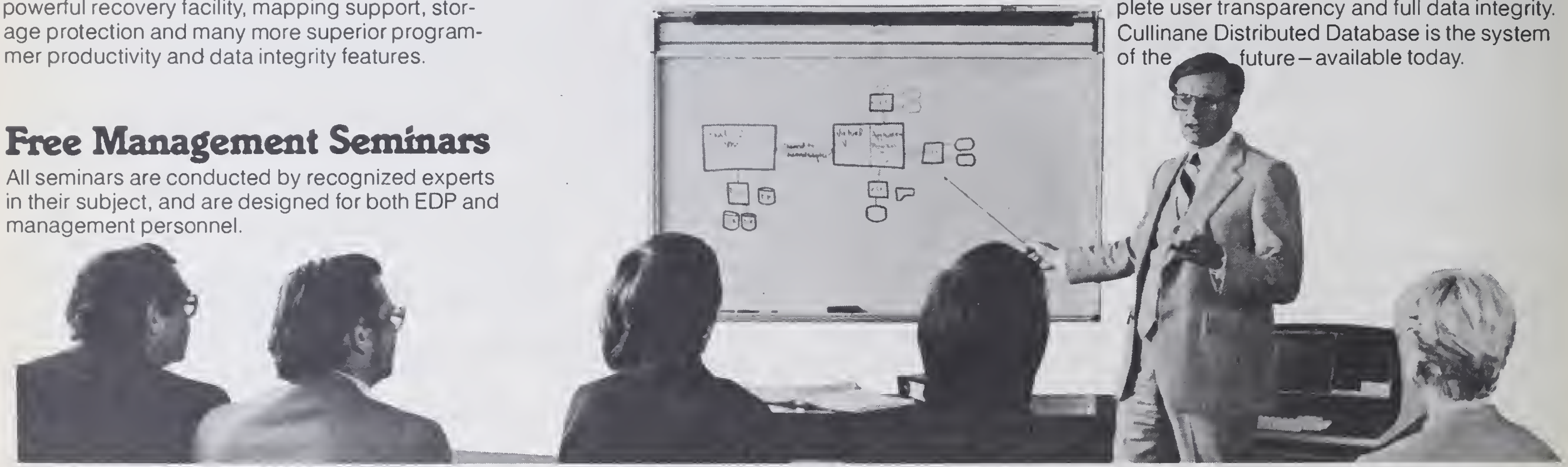

Dates and Cities

September
5 Pittsburgh, PA
6 Syracuse, NY
11 Cincinnati, OH
11 Dallas, TX
11 New York, NY
11 Philadelphia, PA
11 Vancouver, BC
12 Montreal, QUE
12 Atlanta, GA
13 Dearborn, MI
13 El Paso, TX
13 Newark, NJ
18 Cleveland, OH
18 Houston, TX
23 Toronto, ONT
25 Boston, MA
27 Denver, CO
27 Louisville, KY

October
9 Amarillo, TX
9 Dayton, OH
9 Kansas City, MO
9 Quebec City, QUE
9 San Jose, CA
9 Tallahassee, FL
9 Washington, DC
11 Detroit, MI
11 Orlando, FL
11 San Antonio, TX
16 Altoona, PA
16 Milwaukee, WI
16 Mobile, AL
16 Oklahoma, OK
17 Erie, PA
18 Greenville, SC
18 Los Angeles, CA
23 Evansville, IN
23 Hartford, CT
25 Harrisburg, PA
25 London, ONT
25 Portland, OR
30 Columbus, OH

November
1 Piscataway, NJ
6 Bridgeport, CT
6 Hamilton, ONT
6 Seattle, WA
7 Ottawa, ONT
8 Austin, TX
8 Toledo, OH
8 Westbury, NY
13 Buffalo, NY
13 Ft. Lauderdale, FL
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14 Chicago, IL
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15 Richmond, VA
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27 San Francisco, CA
28 Baltimore, MD
29 San Diego, CA

December
4 Ann Arbor, MI
4 Minneapolis, MN
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Service Not Unique

Xten Facing Uphill Fight for Approval?

By Phil Hirsch
CW Washington Bureau

Early this month, Xerox Corp. saw the first major step toward putting its proposed Xten electronic message service (EMS) into commercial operation completed: the Federal Communications Commission (FCC) tentatively endorsed the basic proposal. The commission also asked for comments on a number of unresolved questions but promised that at the end of the comment period in December its "intent and desire" is to "be in a position" to dispense with further rule-making proceedings.

If that happens, Xerox may be able to begin Xten service among "selected U.S. cities late in 1981," as promised in the proposal it filed with the commission last November.

Whether things will actually move that quickly depends on how controversial the FCC proceeding becomes. Judging from the positions taken so far by Xerox and the other participants, the outlook isn't very favorable.

Xten Not Unique

The basic problem is that Xten, while innovative, isn't unique. It includes operational features that promise substantial user benefits, but other suppliers are already offering such features — generally to a smaller audience — or are promising to do so. For example:

- The Xerox network will permit direct end-to-end communication via microwave, thus eliminating telephone company-provided local loops.

Analysis

However, Western Union and American Satellite Corp. are already delivering data to customers via small-diameter, on-site antennas.

- Xerox also promises that Xten will broaden the present market for some newly emerging services such as teleconferencing, electronic mail and videotext/teletext — the terminal-based interactive data base retrieval system pioneered in England and now being developed in a number of other countries.

In the U.S., GTE and AT&T, along with suppliers of multipoint distribution services (MDS), are hard at work on plans to offer such services. (MDS carriers pick up network television programs at satellite earth stations and deliver them to CATV networks for final distribution to their viewers. MDS carriers also transmit pay-television programs directly to viewers in many cities.)

As all this development activity suggest,

(Continued on Page 46)

Insurance Firm Net Reduces Underwriting Turnaround Time

Special to CW

LOS ANGELES — In an effort to improve the effectiveness of its underwriting and cash flow programs, an insurance company here recently put together an extensive dispersed processing network.

The network has not only reduced the turnaround time involved in the underwriting process, but has reportedly helped improve the accuracy of data entry and forms production tasks involved in both the underwriting and cash control programs.

The system has also improved the flow of communications between management in Ticor Mortgage Insurance Co.'s home office in Los Angeles and the 18 branch offices located throughout the U.S.

The private mortgage insurance market in which Ticor participates has expanded dramatically in the last few years. As a private mortgage insurer, Ticor insures high loan-to-value mortgages — home loans with less than 20% down payment — made by lending institutions so they can grant a conventional home loan with as little as a 5% down payment.

Before installing its present Datapoint Corp. business computer systems, Ticor's branch offices used a manual data input system that worked in conjunction with a central computer and service bureau in Los Angeles.

Because a significant portion of the underwriting process was purely manual, the procedure was time-consuming and prone to error.

For example, the data input process involved coding the input document manually, batching it with others, sending it by mail to Los Angeles, answering questions from Los Angeles over the phone and typing the insurance commitment. Errors in com-

(Continued on Page 51)

Remote Terminals Feature Expandable Screen Format

MINNETONKA, Minn. — A remote clustered terminal system that allows the user to expand the terminals' standard CRT format to 27 lines by 132 col was introduced here recently.

Designated the Series 300 Interactive Display System, the product, manufactured by Lee Data Corp., is reportedly the first of a family of clustered processing systems.

According to the vendor, the ability to switch from the standard 24-line by 80-col format to the larger format allows the user to view information as it would appear in hard-copy form.

The Series 300 system emulates the IBM 3270 information display system and is attached to a host computer system by a bisynchronous communications link. The system is said to be capable of supporting up to 32 clustered CRT stations and matrix printers.

The series will also support IBM's Systems Network Architecture/Synchronous Data Link Control (SNA/SDLC) communication and a local attachment feature, according to the vendor.

A typical Series 300 system with controller, seven CRT terminals and a 180 char./sec printer can be purchased for $39,600 or leased for $811/mo over a three-year term. Maintenance is pegged at $249/mo, according to a spokesman.

Deliveries will begin in October from Lee Data at 5700 Green Circle Drive, Minnetonka, Minn. 55343.

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Option Shows Response Time

TULSA, Okla. — Users of Telex Computer Products, Inc. TC277C and TC277D IBM-compatible CRT terminals can now order the company's optional CRT response time indicator.

Using two-key commands, the user can display the response time for the most recent transaction at any terminal, the average response times for all transactions since the counter was last cleared, the response time for the longest transaction over that time span, the cumulative elapsed time and the number of transactions in which the response time was greater than 15 seconds.

Before this option was available, users who needed information on the performance of Telex CRTs had to buy stand-alone measurement devices or rely on CPU-based simulation of CRT performance, the vendor said.

Response time information appears on the 25th line of the CRT and can be transmitted to the host computer for analysis. The cost is $100 if factory installed or $200 if installed in the field.

The option can also be leased, Telex said from 6422 E 41 St., Tulsa, Okla. 74135.

Xten Facing Struggle For FCC Approval

(Continued from Page 45)

several types of suppliers are already jockeying for a position in the EMS market. The FCC proceeding, as a result, could degenerate into a wrangle that will delay introduction of any new electronic message service for considerably more than the two years projected by Xerox.

MDS vendors are unhappy about several aspects of the Xten proposal, including Xerox's plan to use the 10.58 to 10.68 gHz frequency band for its new service and a provision that would limit use of that band to applicants capable of serving the 100 largest U.S. metropolitan areas and who explicitly commit to do so.

Microband Corp., the largest MDS carrier, told the FCC that this requirement would "clearly favor the big at the expense of the small," adding that the measures proposed by Xerox to prevent anticompetitive cross-subsidies — for example, the marketing of Xten through a separate subsidiary — are inadequate.

To those who have been following the battle between Ma Bell and the specialized carriers, this is all familiar stuff. Because the basic problem is the same, it seems likely that what the commission ultimately does about Xten and competing EMS services will also inpact the policies adopted to rationalize telephone network services.

Microband, for example, suggested that one way to reduce the anticompetitive threat posed by Xerox would be to require that Xten be marketed through a separate subsidiary owned partly by outsiders. The same remedy could logically be applied to AT&T, not only for its electronic message service but for all other competitive offerings as well.

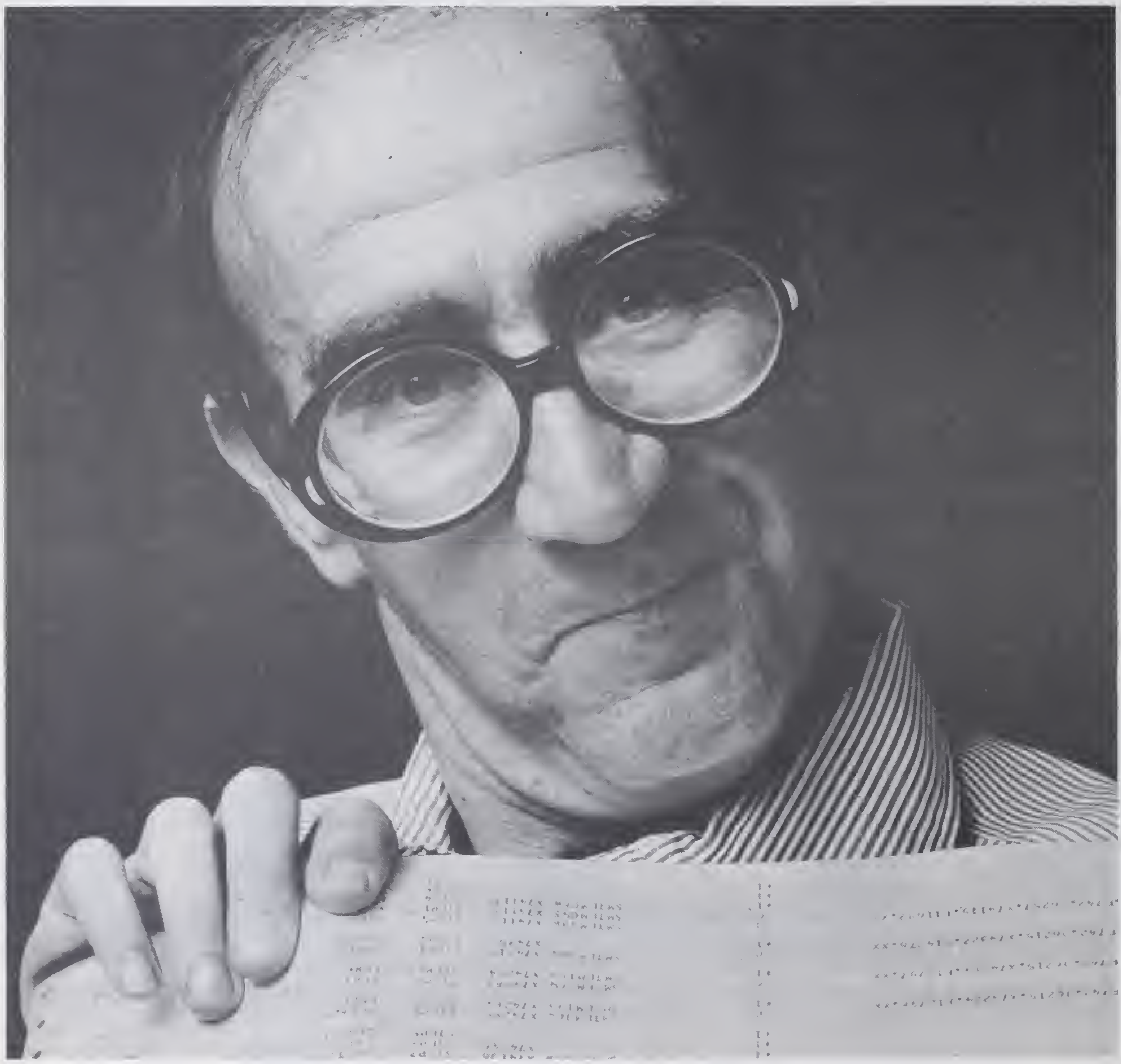
Major Bones of Contention

At this stage it is too early to determine which of the controversies that have surfaced in the FCC's EMS proceeding are negotiable and which are not. The eligibility requirement will be a stubborn obstacle. By limiting the proposed EMS bandwidth to 100-city networks, Xerox fends off competition from less affluent competitors like MDS carriers, as well as from the likes of AT&T. (AT&T also opposed the eligibility requirement, possibly because it is not willing to make a big initial investment in EMS.)

The separation between the well-heeled supplier — such as Xerox or AT&T — and its EMS subsidiary is also likely to provoke a big fight.

On the other hand, AT&T has said it will not tolerate being denied an EMS carrier's license, as recommended by Microband.

The real problem, however, is that the whole parent-subsidiary question underlies the current debate over competition in the telephone business — which represents bell's bread and butter. AT&T has too much invested in that market to accept the kind of separation proposed by the MDS carriers.



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Tektronix 4054 Enhanced With Dynamic Graphics

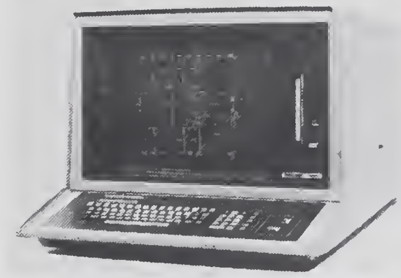
BEAVERTON, Ore. — Tektronix, Inc. has increased the graphics capabilities of its 4054 Graphics Computing System by allowing users to work directly with the graphics elements of a design problem.

The Dynamic Graphics Option 30 is said to enhance a wide variety of design engineering applications that build up complex displays from standard symbols or components, including such things as circuit schematics, facilities layout and city planning applications.

With simple Basic language commands, the option allows the user to create and manipulate complex graphics objects. Once the object is created, it is saved for later recall in dynamic memory, and from there it can be displayed on screen up to 100 times faster than it could be drawn from the program, according to Tektronix.

Field Installable

The Dynamic Graphics Option 30 is a field-installable board for the 4054. Since it includes a high-speed microprocessor and 32K bytes of memory, the option can handle display and movement of refreshed objects on the 4054's 19-in. screen at the same time the 4054 is calculating, storing and retrieving data from mass storage.


Tektronic's Dynamic Graphics Option

The Dynamic Graphics Option 30 is available for $2,500, the vendor said from P.O. Box 500, Beaverton, Ore. 97077.

Halcyon Introduces MPU-Controlled Data Recorder

SAN JOSE, Calif. — A microprocessor-controlled data recorder that can be programmed to start and stop for selected events and data patterns or at specific times of day was introduced here by Halcyon, Inc.

By connecting the 804A in parallel with an EIA line, the recorder can selectively monitor data transactions from a particular terminal in a multidrop environment at speeds from 50 bit/sec to 56K bit/sec, according to the vendor.

An 18.4M-bit four-track cartridge can be used for recording in a continuous loop, recording and shutting off or recording and then cuing a second recorder. Playback is at 14 user-selectable speeds from 50 bit/sec to 56K bit/sec.

Sixteen special function keys are used for programming or for entering special parameters. An eight-character alphanumeric CRT permits an interactive dialog with the operator.

When used in conjunction with Halcyons' 803A data line analyzer, the 804A can measure CPU turnaround time and "totally" recreate EIA line data and status.

The 804A is immediately available for $6,720 from Halcyon at 2121 Zanker Road, San Jose, Calif. 95131.

Comsat Seeking To Build Station In Puerto Rico

WASHINGTON, D.C. — Communications Satellite Corp. (Comsat) has reportedly asked for the authority to construct a $7.7 million earth station in Puerto Rico for operation with the Intelsat international communications satellite system.

Comsat had previously operated and owned part of an international earth station in Cayey, Puerto Rico, but had agreed to transfer it to All America Cable and Radio, Inc. after the Federal Communications Commission (FCC) said that traffic between the U.S. and Puerto Rico could be carried by a domestic satellite system rather than via Intelsat.

In its request for permission to construct the new earth station, Comsat indicated that in the time since the agreement was signed in the early 1970s, a "substantial" international traffic has developed, and "current analysis shows that an international station can now be justified."

Message Volume Increasing

Comsat pointed out that Puerto Rico's international message volume had increased approximately 65% between 1976 and 1978 and projected that service would more than double between 1979 and 1985. The new facility would allow Puerto Ricans the "same benefits of direct access that mainland U.S. citizens now enjoy," Comsat said.

Comsat proposed that its application be processed under the assumption that other U.S. carriers would share 50% of the ownership of the station and that Comsat would operate it and own the other 50%, as it does in other locations in the U.S.

The 1st International Conference on
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- LOGICAL AND PHYSICAL INTERCONNECTION AND COMMUNICATION
- RELIABILITY AND FAULT TOLERANCE
- SYSTEM AND HARDWARE ARCHITECTURE
- DISTRIBUTED DATA BASES
- SOFTWARE ENGINEERING AND PROGRAMMING LANGUAGES
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MESSAGE FROM THE CONFERENCE COMMITTEE

The Call for Papers has drawn a tremendous response in all of the above topics of interest. More than 150 papers have been received to date, including approximately 50 from countries outside the United States. In addition to the two days of tutorials listed below, a free short tutorial (except for the text) will be conducted on Thursday, October 4, by B. H. Liebowitz entitled "Distributed Processing." Since a large attendance is anticipated, we encourage your submission of the Request for Information provided below to the Registration Chairman as soon as possible. To encourage early registration, a free tutorial text of your choice will be offered for registration prior to September 10. The Advance Program, which appeared in the August issue of *Computer Magazine* is also available from the conference coordinator (see coupon below).

TUTORIALS

Monday, October 1, 1979
- Design of Distributed Systems and Data Bases, P. D. Chen and W. W. Chu
- Distributed Processing System Development: Practice and Theory, M. P. Mariani and D. F. Palmer
- Communication Protocols, J. M. McQuillan and V. G. Cerf

Friday, October 5, 1979
- Distributed Processor Communication Architecture, K. J. Thurber
- Decentralized Control Theory, R. E. Larson

REQUEST FOR INFORMATION

TO: Registration Chairman
Distributed Computing
Electrical Engineering
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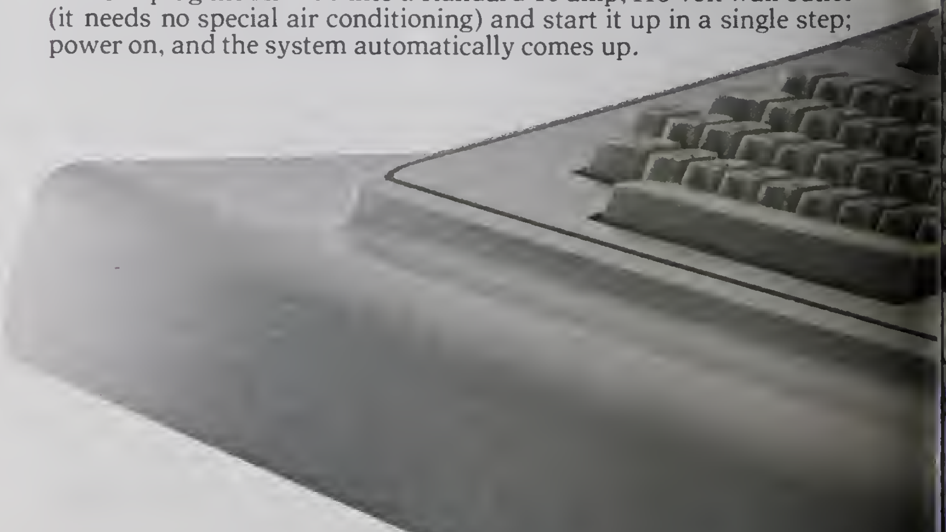

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** E/S **; ACCOUNTS RECEIVABLE; CUSTOMER INQUIRY           CURRENT
 242722  Vanity Fair                                        INVOICES
 253249  Maison Massel Ltd
 254653  Uncle Art's                                       SHIPMENT
 256115  Foothill Agency                                   STATUS
         Peacock, Payne & Pol
 279052  Georgia-Pacific                                   ORDER
 289466  Mountain Charley's                                HISTORY
 301671  Gina's Shop
                                                           CREDIT
 REDIT LIMIT INFORMATION:                                  LIMIT

                      Credit Limit:          $  7000.00   CUSTOMER
 ustomer #266905      Outstanding Balance:   $  2116.25   DETAIL
                      Available Credit:      $  4883.75

 red's Friendly Serv                                       ACCOUNT
 2026 Camino Drive    Current Due:           $   667.50   STATUS
 reston               Over  30 Days Due:     $   918.00
 eorgia  30360        Over  60 Days Due:     $   530.75   OTHER CI
                      Over  90 Days Due:     $     0.00   REPORT
                      Over 120 Days Due:     $     0.00

  another Customer Name or Customer # if desired: _        **RETURN
```

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What does the "TYMNET 3270 Connection" really add up to?

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Five conferences on data communications will be presented in three U.S. cities in late September and during the month of November by *Data Communications* magazine.

The two- and three-day conferences will feature lectures by prominent authorities. Those attending will receive conference notebooks and lunches and will have an opportunity to meet with speakers and other attendees.

On Sept. 25 and 26, a conference on the international standard X.25 interface protocol for packet networks and related network protocols will be held at the Capitol Hilton in Washington, D.C.

On Nov. 5 and 6, a conference at McGraw-Hill headquarters in New York City will cover "Understanding Data Communications Network Components."

Nov. 13-15, the same site will host an integrated data/-voice/facsimile communications conference. On Nov. 19 and 20, a data communications standards conference will be held at the Hyatt on Union Square in San Francisco. Communications procurement will be covered at the Mayflower Hotel in Washington, D.C., Nov. 27-29.

More information is available from the McGraw-Hill Conference Center, Rm 3677, 1221 Ave. of the Americas, New York, N.Y. 10020.

Net Speeds Processing for Insurer

(Continued from Page 45)

putation were often not found until the document was transferred to the central computer system.

This approach was costing Ticor more than $25,000 a month. "It seemed as if our DP cost was increasing faster than our premium volume," according to Fred Willis, director of systems and DP. "Dispersed processing is not only speeding up our underwriting program, but by purchasing the equipment we expect to achieve a significant return on our investment within 18 months."

Same Day Turnaround

With the dispersed processing and communications system, each office, using either a Datapoint Corp. 1170 dispersed processor or 5500 business processor, is able to provide same-day turnaround on commitments for mortgage insurance. A variety of verification checks built into the program of each branch system makes it easier to underwrite quickly and without error, Willis said.

Data entry, processing and printing of a commitment is now accomplished in one action that normally takes less than three minutes to complete. Policy data is entered either on a Datapoint 3601 CRT workstation — supported by a 5500-based 4520 Datashare system — or on an 1170 dispersed processor.

This data is checked by software edits written to fit the underwriting guidelines of the home office, after which a final verification of calculations is made. A final commitment of insurance is then printed out.

The commitment can then be handed to the policyholder or mailed and received the next day. The premiums and policy data are stored on diskettes or cartridge disks for batch transmission to the home office at the end of the day.

Cash Control Program

Ticor uses its systems not only for underwriting checks but for a cash control program as well. "Previously, our financial planning department was unable to readily identify how much cash was available to invest at any given moment. Now, at the end of each day, it knows exactly how much cash has been received and paid throughout the branch network," Willis said.

The Ticor network ties into a Datapoint 4520 Datashare system maintained at the home office. The system includes a Datapoint 5500 processor, an 80 char./sec printer, a 5M-byte cartridge disk, a tape drive, a communications interface and time-sharing software.

The smaller 1174 systems are based on the 1170 processor, which has a four-diskette storage unit, an attached 80 char./sec printer and a communications interface.

The home office system creates a daily transaction file on its tape unit, which is then transferred to an IBM 370/158 mainframe with a resident premium/commission software application package. The CPU does the necessary "number crunching" and file management.

Branch communication is handled using Datapoint's communications software. Ticor decided to buy the package instead of writing the communication software on the mainframe.

Each night after work, the unattended 4520 system polls each of the branch offices to obtain data on daily policy and cash transactions. A program activated by branch personnel before they leave the office will respond automatically.

"The system is very easy for branch personnel to learn," Willis said. "Menus with selections of commands lead the operator through the transaction to be performed.

"If, for example, cash received for a premium must be entered, the operator types the cash command on the workstation. Additional screen formats appear so the operator can fill in the blanks to complete the transaction."

When Ticor decided to change its method of data processing, it considered a variety of approaches including remote job entry with a large central computer, intelligent terminals tying to a large central computer and dispersed processing.

"Remote job entry terminals or intelligent terminals tied to a central computer would have slowed down the underwriting process," the DP direction stated.

With dispersed processing, "each branch feels autonomous because it has its own computer system," Willis explained.

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Networks 80 Soliciting Papers

LONDON — Networks 80, an international conference to be held June 3-5, is soliciting papers pertaining to the development and use of data networks in the mid-1980s.

Among the areas to be covered in the conference are network topology, network protocols and software, switching techniques, distribution of data bases, network reliability, standardization and public information inquiry services.

Papers describing current or projected research, developments or applications will be presented at the conference, to be held at the Bloomsbury Centre Hotel in London.

In order to submit a paper for review, it is first necessary to notify the conference by sending a working title of the paper, a summary of its contents and your name, address, phone, title and place of work to On-line, Cleveland, Road, Uxbridge, UB8 2DD, England. Rough drafts must be submitted by Nov. 28.

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Accomplishes Week's Work in Two Days

Net Eases Order Processing for Shade Maker

Special to CW

MIDDLETON, Wisc. — A nationwide distributed data processing (DDP) network has cut order processing nearly in half for one of the largest makers of decorative shades and drapery hardware.

About 2,700 people in six manufacturing plants and 15 distribution centers across the U.S. are making and shipping items such as window shades, curtain rods, curtain trims and fringes, explained Bob Monthey, senior systems analyst for the Graber Co.

"You can imagine the huge volume of paper we went through manually processing orders through the mail. Since going to a distributed processing network, what typically took us a week to ship now goes out in just two or three days," he added.

Orginally, the Graber Co. only had a .5M-byte IBM 370/138 in its headquarters here. The recently installed Basic/Four Corp. distributed data processing system communicates with the 370/138, emulating its 2780 data communications protocol.

At present, four regional computers centers — Los Angeles, Atlanta, Dallas and Middleton — are in the network. Another center is planned for installation somewhere in New Jersey to serve satellite CRTs and printers in Boston and Cleveland, Ohio.

CRTs and printers in Miami and San Francisco have already been connected to computers in Atlanta and Los Angeles, respectively. The satellite systems are tied in via phone lines through Codex Corp. modems with built-in time-division multiplexers.

Right now, the company is in the process of running satellite operations in Minneapolis, Detroit and Chicago over phone lines to the Middleton computer.

Installation Set-Up

Each remote computer installation consists of a Basic/-Four System 610 plus Basic/-Four CRTs and a printer. The minicomputers communicate with the IBM mainframe via dial-up synchronous telephone lines operating at 4,800 bit/sec.

The data communications network uses RS-232C interface circuitry, which is an integral part of each 610 CPU. In addition to the Codex synchronous modem at each location, a second modem provides asynchronous communication for maintenance functions.

The system allows personnel at each local distribution center to perform various tasks on the CRTs. These tasks include order entry, order status, maintenance, shipping information input and local inventory control. The branch processes the order and prints shipping paper as well as order status reports.

At night, the branch transmits the day's transactions in batch over telephone lines to the IBM mainframe at Middleton. The IBM system prints customer invoices and does bookkeeping and accounting chores for the entire company. In addition, it transmits updated information to the branches for processing.

"The main advantage of the branch computer is customer service," Monthey said. "The system is programmed to follow an order each step of the way. In other words, while customers are on the phone, we can immediately check credit, stock availability and when and by what carrier an order is being shipped."

Of the four distribution centers, both Dallas and Los Angeles have five CRTs plus a 150 line/min printer, while Atlanta and Middleton each have four CRTs and a printer.

The hardware two in each of the 610s consists of 80K bytes of system memory plus 35M bytes of disk storage with disk drive and high-speed direct memory access channel. The Atlanta and Middleton computers each have 96K bytes of system memory plus 35M bytes of disk storage.

Graber's software package was designed by Computer Methods, Inc. of Madison. The software firm took some of its existing packages and rebuilt them to take the manufacturer's specific needs into account, with the result that "it's been good software — it's easy to use and it's easy to understand what's going on," Monthey said.

"The DDP system was designed to allow the company to grow while steadily improving customer service. Eventually, all our satellite branches will be equipped with a CRT and printer online to the regional computer.

"This will allow virtually all of our distribution centers to have access to the many capabilities of the computer network," Monthey pointed out.

About 15 fifteen employees have been trained so far to enter orders on the system — a process that Monthey said took each employee only a few hours to understand fully. The batch data transmitting function requires about two weeks of instructions. The company has not had to hire any outside personnel to operate the system.

"In fact, we plan to conduct our own employee training for the new distribution center equipment by using hardware and software in our Wisconsin headquarters," Monthey explained.

The switch to a distributed data network has improved the efficiency of the organization by freeing employees from tedious paperwork and speeding the flow of information to enhance overall productivity," he said.

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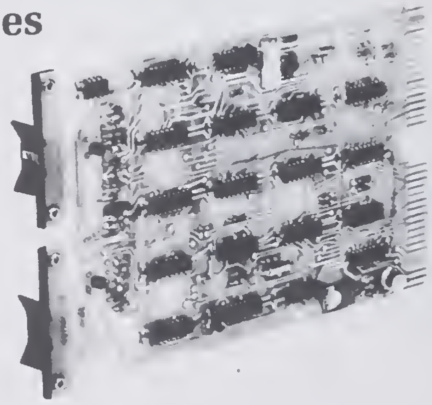

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National Semi Introduces Data Acquisition System

SANTA CLARA, Calif. — National Semiconductor Corp. has introduced a 16-channel data acquisition system with on-board memory that reportedly allows asynchronous data communication.

Known as the ADS1216, it offers 12-bit resolution, 200 nsec throughput and two on-card memories that allow asynchronous communications between analog and digital portions of the user's system.

The ADS1216's random-access memory (RAM) enables preprogramming of signal gain for each of the 16 channels of analog output. A gain-set network allows eight selectable gain settings between one and 100. Data can be stored in a second 16- by 12-bit RAM until required by the system.

"Upon completion of each data conversion, the RAM is updated so the latest data for all channels is always resident in the RAM," a spokesman explained.

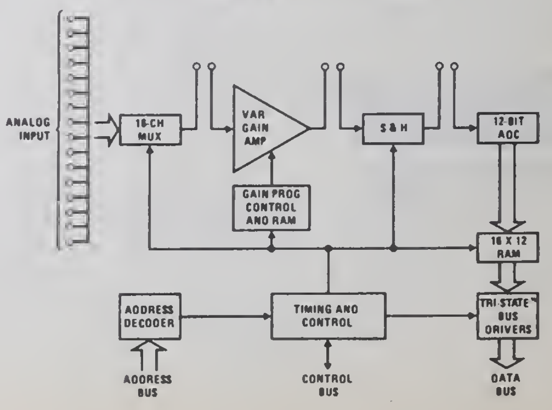
The ADS1216 includes bus drivers, precision voltage reference, a sample-and-hold amplifier and the timing, control and interface circuitry needed to interface the system with any eight-, 12- or 16-bit bus. The board appears to the CPU as the CPU's own memory.

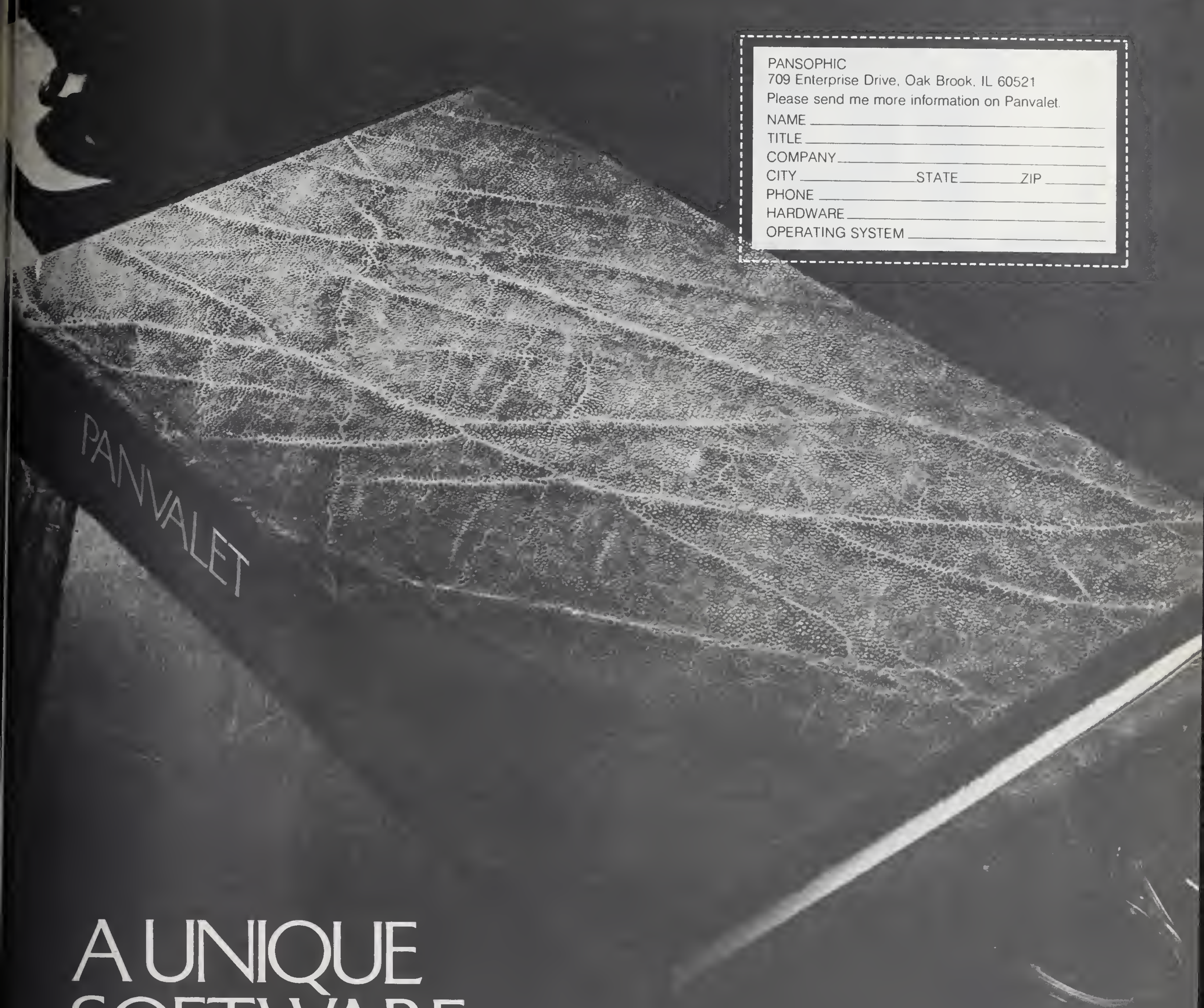
Data is accessible at main memory access speed because the ADS1216 can present its preselected channel data to the data bus within 220 nsec of the time the mainframe asks for it, the spokesman claimed.

The board's 16-channel multiplexer can be configured as 16 single-ended, 16 quasi-differential, or eight differential channels. In quantities of 25 or more, the system costs $540.

National Semiconductor is at 2900 Semiconductor Drive, Santa, Clara, Calif. 95051.

ADS 1216 SIMPLIFIED BLOCK DIAGRAM





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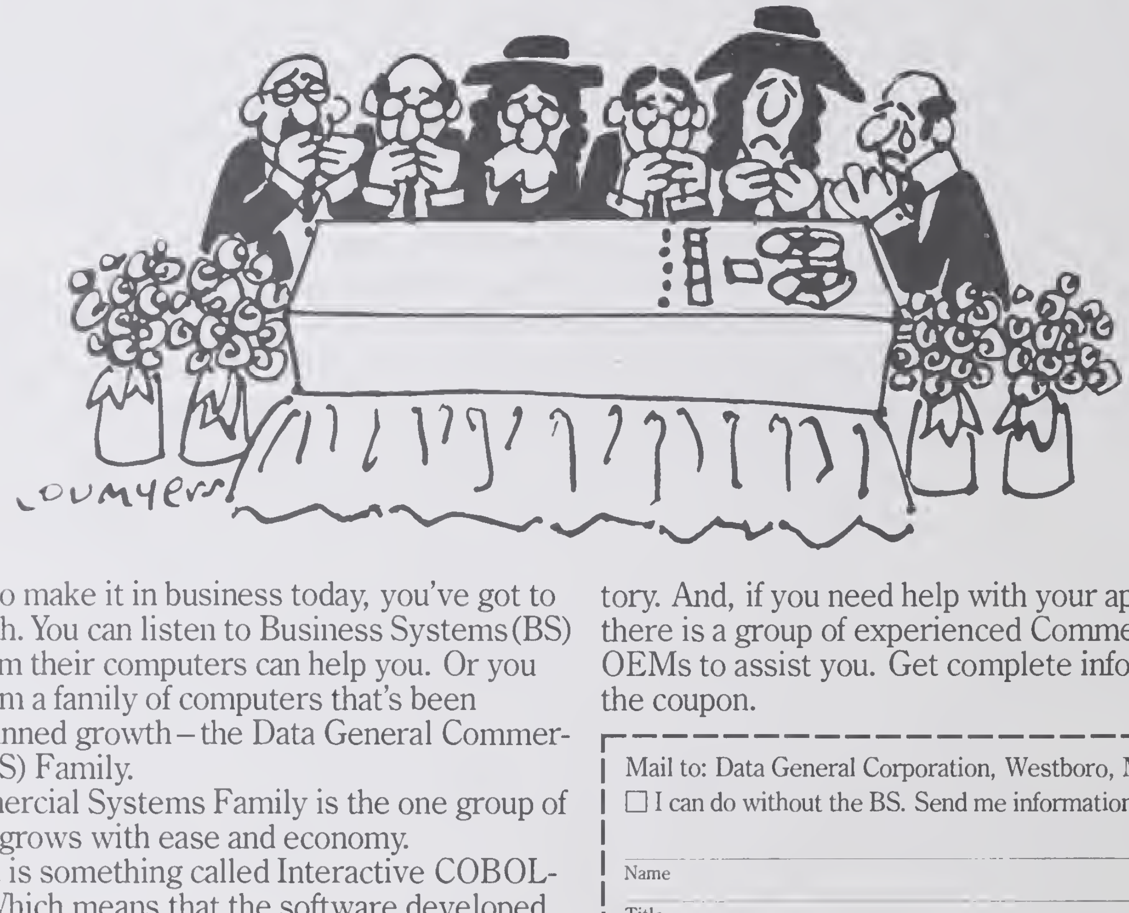

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To Schedule Truck Routes

Dairy Concern Milks Power of System

By Tim Scannell
CW Staff

CHARLESTOWN, Mass. — The procurement rules may have changed, but the game is the same.

Although stainless steel vats and machines have replaced tin pails and muscle, the dairy industry's first concern is still to get the final product to the consumer as quickly as possible. Fortunately, the job is made a little easier with a computer, according to George J. Osipov, corporate director of information processing for H.P. Hood, Inc.

"For us, the most important thing is to find out which store, location or warehouse needs something tomorrow so we can key it in to the factory, make it and ship it," the dairy's DP head stated.

Headquartered here in the shadow of historic Bunker Hill, H.P. Hood provides citrus and dairy products to all of New England and parts of upstate New York. The company also has small cheese and candy operations located nationwide and headquartered in Pennsylvania and Illinois, respectively, as well as an unfinished furniture shop that specializes in do-it-yourself-type articles.

Trimming the Fat

Recently, Hood trimmed away some of the excess fat in its DP department by replacing both an IBM 138 and a 145 processor with a single IBM 3031. The new mainframe has 2M bytes of memory and coordinates the activities of a variety of optical character recognition (OCR) and on-line data entry equipment, several tape and disk drives and three printers.

Although the 3031 was an expected upgrade and easily does the work of the two previous machines, the processor was brought in primarily to replace the underused 138 machine. Initially installed to support the programming staff, the old IBM system was only being used approximately 200 to 300 minutes a week and was taking up valuable computer room space, Osipov stated. "There wasn't such a turbulence in terms of personnel and there wasn't all that much work [for it] to do.

"So it was a much better move to go ahead and get a much faster mainframe that could handle all the loads," the DP director added.

In addition to replacing the two mainframes, the more advanced 3031 served to consolidate all of Hood's software packages, which previously tended to overlap with one another in the double-mainframe environment. For example, the computers were running both the IMS and Total data base management systems at the same time, as well as using a telecommunications access method and the Environ teleprocessing monitor — "which is not the

(Continued on Page 56)

Chain of Women's Clothing Stores Stays in Step With Aid of System

By Tim Scannell
CW Staff

DETROIT — If someone were to ask Jack Kort how the pressurized world of fashion and cool logic of computers could possibly go together, he'd probably answer "very well."

Kort is the director of information systems for Winkelman Stores, a chain of women's clothing shops with more than 75 branches scattered throughout Michigan as well as in Dayton, Ohio, and Chicago. However, even though the company is spread over three states and does business in excess of $85 million per year, all of its inventory control and accounting operations are managed by a computer system located here at the company's headquarters.

"Our main goal is to computerize all [the stores'] manual operations . . . where it's all controlled by one system," Director Kort said, outlining the goals of the retail firm. "If you do away with human intervention, then you're saving money."

Range of Equipment

Winkelman currently has a Univac 1100/11 computer, connected to a satellite 1004 system, that it uses for all the company's main administrative processing. In addition, the retailer uses an NCR Corp. 725 computer — geared to poll the NCR 280 cash registers at each of the firm's outlets — and a Datatrol, Inc. PDP/8E system targeted to authorize credit for the chain's more than 1,200,000 charge card holders.

The company also has a Burroughs Corp. Model 1700 minicomputer, used for mail receipt processing, and a Four-Phase Systems, Inc. data entry operation, Kort explained.

The Michigan-based clothing chain has been using the 1100 system for nearly two and a half years without any major mishaps. Previous to the present computer setup, Winkelman had a Univac/3 mainframe that threatened to limit the growing company to 32K words of usable memory and entirely rule out the possibility of on-line point-of-sale functions. "Now we can double, triple or quadruple our memory size as much as anyone can imagine," Kort pointed out.

Minor Problems

The firm's DP director noted that some problems were encountered while converting the assembler language programs of the Univac/3 to fit the requirements of the 1100 machine — a process that involved 11 months of work and the alteration of about 250 different programs.

However, the job was simplified by a program written by one of Univac's customers in Germany. The program transformed Winkelman's old routines to the new format, Kort stated.

Presently, the firm's DP staff works three shifts to keep up with the burgeoning growth of Winkelman Stores and the resultant flood of administrative paperwork. In fact, the DP department just added two program-

(Continued on Page 59)

Nixdorf Unveils Family Of Multifunction Gear

BURLINGTON, Mass. — Nixdorf Computer Corp. recently introduced a family of multifunction computers it called distributed processing systems. The systems are aimed at users who might be considering the IBM 8100, Datapoint Corp. ARC systems, the Pertec Computer Corp. CMC XL40 or similar systems, according to a spokesman.

Aimed primarily at Fortune 100- and 500-type customers, the 600 family includes five members: the models 15, 25, 35, 45 and 55. With the exception of the Model 25, all systems are field-upgradable, although all models are fully software-compatible, the firm said.

Although each of the systems can support a maximum of 128K bytes of real memory, each was designed as a virtual system. The two largest systems, the models 45 and 55, support a maximum of 8M bytes of virtual storage. Software support for the systems is unbundled.

Prices for the systems range from $31,450 for the Model 15 — with software, communications, a printer, two entry stations and 630K bytes of diskette storage — to $159, 050 for the Model 55.

For that price, users get 66M bytes of disk storage, 16 key stations, a 9-track, 1,600 bit/in. tape, a 900 line/min. printer, two 45 char./sec printers, two communications channels and all

(Continued on Page 58)

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System Plans Truck Routes for Dairy Concern

(Continued from Page 55)

thing to do," Osipov said. "You really ought to have a clean house and go one way or the other way."

"We had a tremendous number of different language and release levels, so we got that cleaned up," he continued. Before, the company's DP "act just wasn't put together right."

Minor Difficulties

Even though the 3031 is presently running "pretty well," a few minor problems did crop up when the system was first plugged in. "We had it go down inconveniently a couple of times, and it took about seven hours to get it fixed — which to us is a big difficulty since we're loading trucks with milk," Osipov said. The computer is used to schedule truck routes and plan delivery dates, and "if you don't get [the milk] there, it's one day old."

After that, the machine's cards were plagued with integrated circuit problems, the DP director continued. However, "they have taken all of the bugs out since then. Right now, we have only one intermittent [equipment error] which we're [presently] trying to catch."

Since Hood's Charlestown DP operation is primarily concerned with the citrus and dairy portions of the business, the firm's cheese and candy affiliates process their sales records and inventories on separate minicomputer systems. Each operation has a small IBM System/3-type machine, and both are on the verge of being replaced with later model computers.

Hood is considering a number of machines as upgrades to the "dying" System/3s, including the IBM 4300. But right now, the 4300 "looks kind of scary, because nobody knows what it is or how much software it will take to run it," the dairy executive observed.

Regrouping in Order

For the moment, Hood's main DP center is satisfied with its equipment and plans to upgrade as the pressures of the dairy market demand. "We have to have adequate resources," but at the same time "we cannot afford to have more resources than we need.

"The change from two mainframes to one mainframe was an upgrade of sorts, so now we have to pretty much regroup, get ourselves cleaned up and continue," Osipov remarked.

The company plans to engage more and more in online, source-level data collection as time goes on and to pursue a distributed processing approach within the next few years. In light of the present fuel situation, Hood hasn't ruled out the possibility of using its computers to monitor the efficiency with which gasoline is being used by its fleet of a few hundred trucks.

But "right now, that's not one of the things I've been asked to do," Osipov said. "We do a certain amount of routing of our trucks as it is, depending on what's on the truck, but we're not doing it in terms of fuel savings."

For now, Hood's 3031 will continue to perform such standard business-oriented tasks as payroll, month-end closings and sales analysis. The firm's 55-member DP staff will strive, as one chief executive put it, to have the computer "work smarter than we have been working."

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Carol Mersch
Information Systems
Manager
Agrico Chemical Co.

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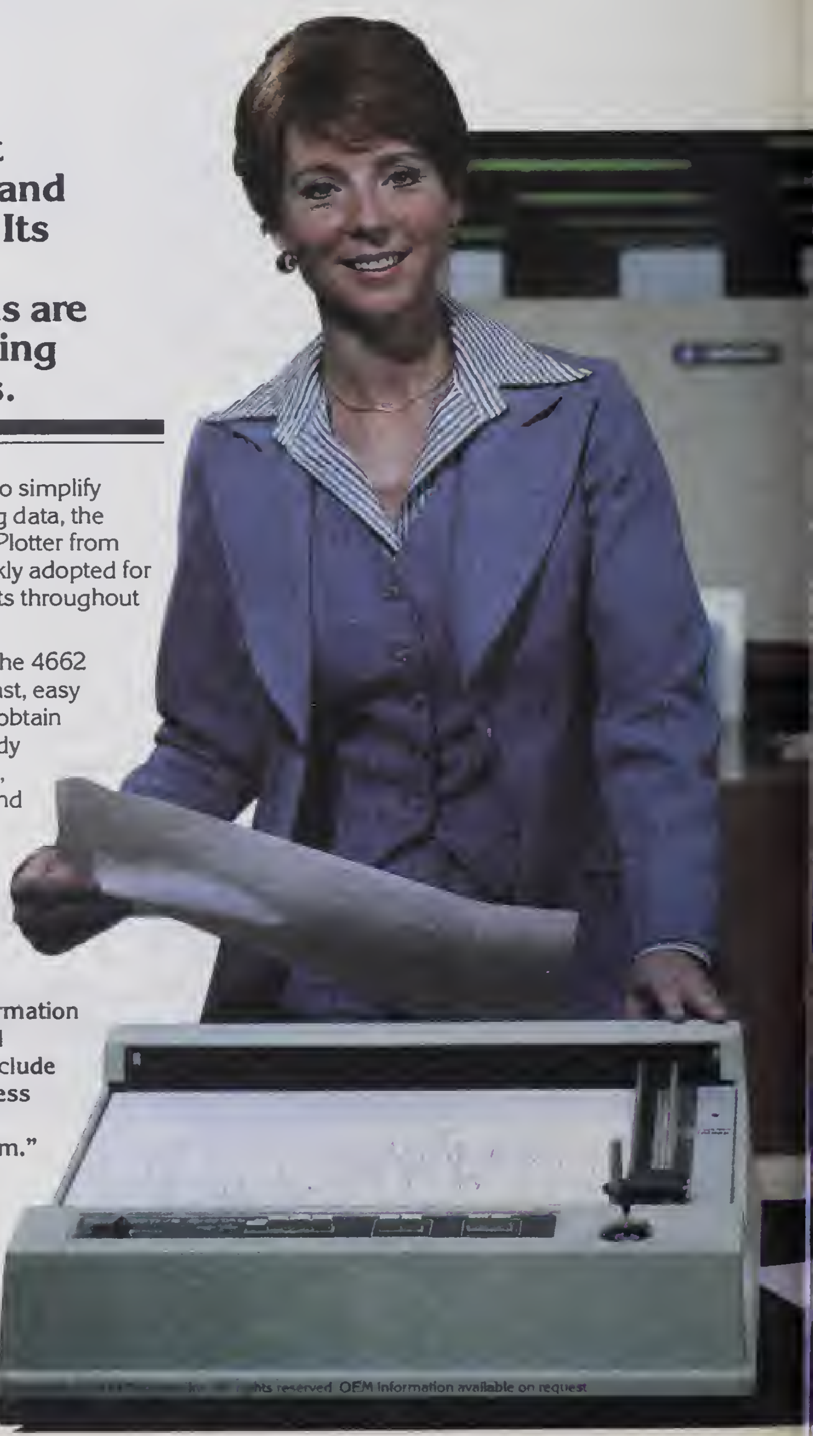

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Power System Debuts

LONG BEACH, Calif. — A self-contained power system that allows large- and medium-sized system users to shut down the power to their systems from a central location is available from Computer Power Systems Corp.

Accepting any raw power input from the building source, the System II Model B will transform power to meet the CPU's needs. The system also employs a master/slave concept to report emergencies to a central area where operators are working, the vendor said.

The system employs several detection devices, enabling it to react differently to different emergencies. If the computer systems loses one of its power phases, the power system will shut down automatically.

During the less serious emergencies, the system will sound an alarm to give operators time to go through memory-saving routines before shutdown. The power shutdown phase can also be aborted if necessary.

The system costs between $10,000 and $20,000, depending on the KVA size, which ranges between 50 and 150 KVA. The unit is about the size of a disk drive, with a 30- by 30-in. cabinet 53 inches high.

Installation of the system takes about three hours, the vendor said from P.O. Box 608, Long Beach, Calif. 90266.

Device Protects CPU From Power Surges

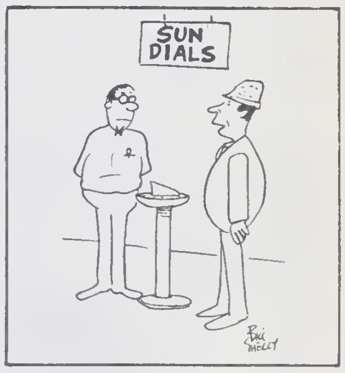
MIDDLETOWN, N.Y. — Computer users can get limited protection against power surges or power drops with the Silentblok frequency converter, according to the manufacturer. Although the device does not offer the full-scale protection against brownouts that an uninterruptable power system (UPS) offers, the product is significantly less costly than a UPS, a spokesman claimed.

The device can control power surges up to 1,500 Vac and dropouts of more than 100 msec. In addition, the unit can maintain power for up to one halfsecond during a full three-phase dropout and up to 16 seconds in a 40% dropout. Use of the device will leave CPUs completely unaffected by brownouts, according to KW Control Systems, Inc., which markets the device.

If power fluctuations exceed a preset length of time — which varies depending on the extent of the fluctuation — the converter will switch to another frequency to prevent damage to the CPU or peripherals, the KW Control Systems spokesman said.

The unit is available for IBM 370/165, 370/168, 3032 and 3033 CPUs. Silentblok can also be used as OEM equipment on Univac equipment and on other vendors' CPUs, the spokesman said.

Units start at approximately $14,000 for 25 KVA and range to $43,000 for 300 KVA, KW Control Systems said from R.D. 4, P.O. Box 114C, S. Plank Road, Middletown, N.Y 01940.



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Nixdorf Introduces Line Of Multifunction Systems

(Continued from Page 55)

software, including word processing. Lease prices on these two systems are $761/mo for the Model 15 and $3,953/mo for the Model 55. Both are five-year leases and include maintenance.

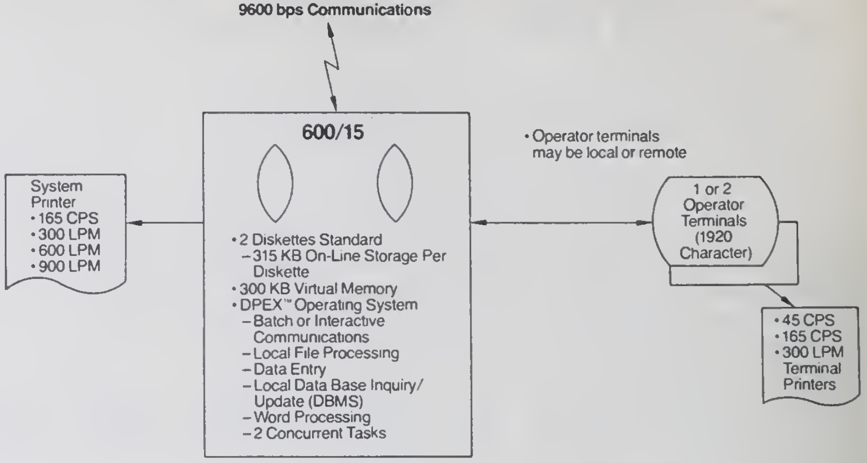
First shipments of the processors will begin in October, the spokesman said, to be followed in November with the 900 line/min printer, a remote terminal concentrator and the word processing package.

Production will continue on the older Model 600 line, first introduced in 1976, until Jan. 1. At that time, the firm will sell that equipment on an as-available basis, the spokesman noted.

Designed for a standard office environment the 16-bit system will perform up to 32 concurrent tasks, the spokesman claimed. These can include a mix of batch and interactive communications, local file processing, data entry, word processing and local data base inquiry and update.

The language processor and operating system alone lease for $50/mo. The sort feature costs $15; the security software, $15; extended 3270 support, $15; word processing, $50; and an audit trial ability that logs operator actions, $15.

Nixdorf is located at 168 Middlesex Tnpk., Burlington, Mass. 01803.



System Configuration for the Nixdorf 600/15.

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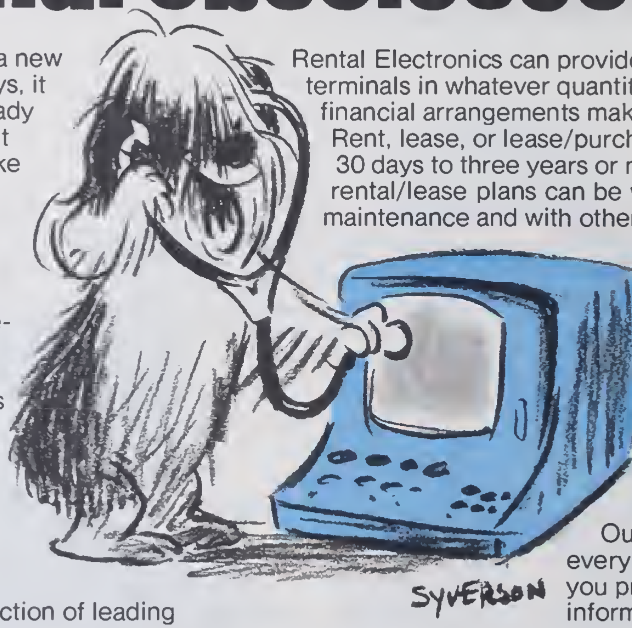
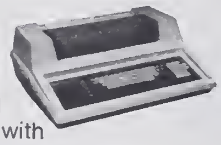
If you're interested in more information on renting printers or terminals from Rental Electronics, call one of our local rental centers today. They're listed opposite. Our on-line computers at every location let us give you price and availability information instantly, while you're still on the phone. In the meantime, check some of our featured rental offers below.



Printers and Data Terminals

Here is a sampling of the printers and data terminals available from Rental Electronics. Call or write today about your specific needs.

TI Model 820 Keyboard Send-Receive Data Terminal/Printer Printer operates at 150 cps on 9 x 7 wire matrix assembly printhead. Full ASCII Keyboard (ANSI-compatible) with N-key roll over. Operates in Asynchronous, USASCII, RS232C interfaces and is compatible with Bell 103, 113, 202 and 212 units. Selectable baud rates of 110 to 9600.

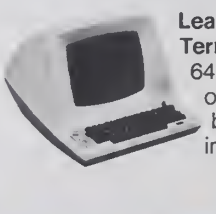


Hewlett-Packard 2621A/P Terminals Enhanced 9 x 15 dot character cell, full 128-character ASCII character set in 24 80-character lines. Two pages of continuously scrolling memory. RS232C and Bell 103A compatible. 110 to 9600 baud. 2621/P includes built-in printer operating at 120 cps.

Tally T-2000 Hush-Tone Line Printer Acoustically designed enclosure. Operates at 125 (Model 2100) and 200 lines/minute (Model 2200) with standard 64 character USASCII. Line spacing switch selectable, 6 or 8 per inch.

ADDS Regent 200 Terminal 24 lines x 80 characters, 25th "status" line shows operating mode. 128 character ASCII. RS232C/CCIT V.24 communications interface operating 75 to 19.2 BPS, switch selectable. Buffered transmission, auxiliary ports.

Beehive Micro B 1A Terminal 128 ASCII character set; switch selectable scroll/non-scroll mode; X-Y addressing; 24 x 80 display format; single key memory lock; fully buffered communications to auxiliary peripheral device.



Lear Siegler ADM-3A Data Entry Display Terminal 12" diagonal, 24-line screen. 64 ASCII characters. Full or half duplex operating modes, switch selectable, baud rates from 75 to 19,200. RS232C interface, 20mA current loop.

Rental Electronics, Inc.
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System Manages Inventory for Clothing Stores

(Continued from Page 55)

mers to its five-programmer staff to prepare for the coming of on-line processing capabilities.

One of the biggest daily jobs in Winkelman's DP section is gathering all the inventory and retail information from each of the far-flung stores and compiling it into an accurate report. The managers at each store receive this report, without fail, every Monday morning.

"When we finish up a week on Saturday night, we've got all kinds of processing to do to put out all kinds of reports that are organized by color, size and by style, as well as a variety of other information for the merchants to look at on Monday morning," Kort noted.

Continued Growth

However, as sophisticated and dependable as Winkelman's computer system is now, the company's DP growth does not stop there, Kort observed. "We have plans. We're right in the middle of a purchase order management (POM) system and a credit collection system. They're on the drawing board and we're just now getting into programming."

According to Kort, the POM system will allow workers to key shipments into the computer as the shipments come into the warehouse, creating an automatic distribution process. Distributors could then control materials flow through a set of CRT scopes, avoiding having to write the information on a piece of paper and enter it into the computer at a later time.

"We could also generate reports for accounts payable and our merchandise division," Kort said.

Customer File

The on-line credit collection system would create a dedicated file of store customers (for each branch) and help to keep better track of what's happening with the people [the stores] are collecting from.

"Obviously, by putting [the information] all on-line and by using data bases, we have the advantage of streamlining all the reports we're putting out here and growing more toward an acception-type reporting system," Kort said.

Finally, Winkelman Stores itself is studying the possibility of expanding its retail operations away from the Michigan area into states further west or east. Using the Chicago chain members as test cases or prototypes, the store is seriously considering tackling the rest of the country.

"Once we get a grip on what's happening in Chicago, we'll be in a better position to start expanding," Kort commented.

Decsystems Get Memory Option

MAYNARD, Mass. — Digital Equipment Corp. recently announced an expanded MOS memory providing up to 12M bytes of additional memory for high-level members of the Decsystem 10 and mid- to high-level members of the Decsystem-20 line.

The models affected by the announcement include the 1901-S, 2040 and 2060. All three models are based on the KL10-E central processor, a spokesman said.

Up to 5M bytes of memory can be added to existing system cabinets. The full 12M-byte expansion requires an additional cabinet, the vendor said.

The first 5M bytes, which are added to the existing 1M byte cost $220,000. The additional 6M bytes costs $264,000. Delivery of the MOS memory is scheduled for early 1980, DEC said.

Basic configurations for the 2040, 2060 and 1091-s cost from $324,600, $399,100 and $440,700 respectively, the vendor said.

Forum to Cover Data Entry

CHERRY HILL, N.J. — Management Information Corp. (MIC) will hold a three-day seminar dealing with the "practical world of data entry" Sept. 10-12 at the Cherry Hill Inn here.

The seminar will cover topics such as data entry system concepts, control techniques, personnel communications and motivation and data entry productivity improvement.

The seminar, intended for data entry managers, supervisors, lead operators, DP managers and data entry technical support personnel, costs $415 for subscribers to MIC publications, or $495 for nonsubscribers.

The fee includes all luncheons and meeting materials and a get-together afterward, a spokesman said. Further information is available from MIC at 140 Barclay Center, Cherry Hill, N.J. 08034.

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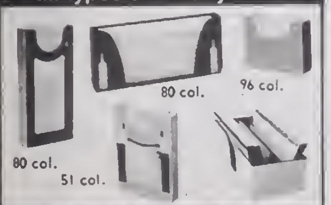

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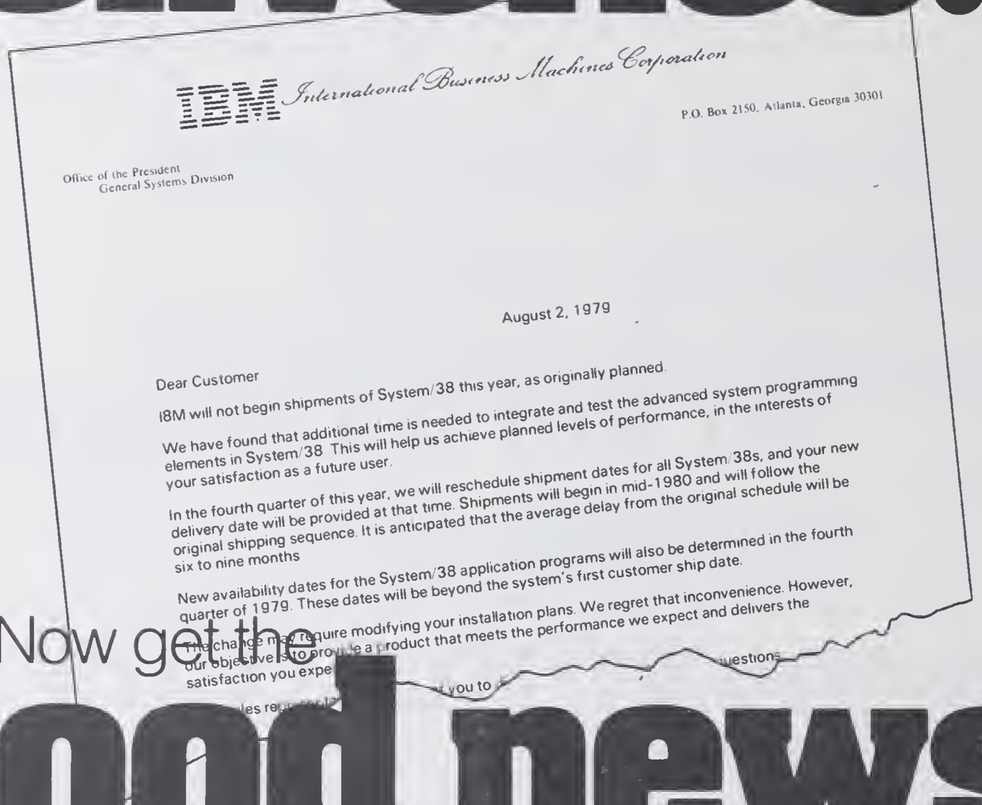

IBM International Business Machines Corporation

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Office of the President
General Systems Division

August 2, 1979

Dear Customer

IBM will not begin shipments of System/38 this year, as originally planned.

We have found that additional time is needed to integrate and test the advanced system programming elements in System/38 This will help us achieve planned levels of performance, in the interests of your satisfaction as a future user.

In the fourth quarter of this year, we will reschedule shipment dates for all System/38s, and your new delivery date will be provided at that time. Shipments will begin in mid-1980 and will follow the original shipping sequence. It is anticipated that the average delay from the original schedule will be six to nine months

New availability dates for the System/38 application programs will also be determined in the fourth quarter of 1979. These dates will be beyond the system's first customer ship date.

The change may require modifying your installation plans. We regret that inconvenience. However, our objective is to provide a product that meets the performance we expect and delivers the satisfaction you expe

Now get the

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Take a good look at that letter. IBM told thousands of would-be System 38 owners that they were just going to have to wait until next year...at the earliest. That leaves thousands of businesses with outmoded, overcrowded systems. But IBM says these people are just going to have to make do until a System 38 becomes available.

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AUGUST 27, 1979

EDITED BY BRAD SCHULTZ

Getting to 'Guts' of Business

Productivity Not Boosted by Automation Alone

By Patrick Vance Kauffold
Special to CW

A computer system is an attractive solution often put forward when a small business is looking for ways to "improve productivity." Its potential to improve and streamline a growing business is obvious. Why, then, do many businesses fail to achieve significant productivity gains when they install their first computer?

One reason is the lack of understanding of "productivity" and what makes a business productive. What is productivity? It is the ability of a business to convert its input into output. The input is usually some combination of materials, labor, capital, time and technology; the output is the goods and services the business delivers to the marketplace.

In order to improve productivity, one must first define productivity in the context of the business. This production (or operations) function exists in every type of business, although where may not always be apparent.

In general terms, this function "provides utility," which is what the customers buy. In manufacturing, this function is obvious. In service businesses or government, it is more difficult to separate production from administration. It is critical to productivity improvement to define this function clearly.

More Output from Input

To increase productivity, a business must realize greater output from each unit of input. This simple requirement implies measurement of both input and output, which is usually far from simple. Accurate cost data is the basic information needed to determine where present costs are, what applications would be most appropriate and what effect the system will have.

Productivity improvement means reducing the *total* cost of a unit of production, which involves both direct and indirect costs.

Direct costs are those which may be identified directly with a specific product, such as material costs and labor costs. Direct costs are the *variable costs* which change with the level of output and are sometimes called "unit costs."

Indirect costs, or "overhead," cannot be applied to any one unit of output. These costs consist of utilities costs, rent, administration, and so forth, and do not change as output is increased or decreased. They are generally treated as "fixed" costs, "absorbed" by allocating part of them to each unit of production.

How will the computer affect your cost equation? The computer itself adds to overhead. This increase in cost must, then, be offset by decreases in other indirect costs, direct costs or both. You are, in effect, trading off a cost increase in one area against a cost saving in another. The net effect must be a reduction in total cost if productivity is to improve.

While this may seem obvious, why is this fundamental truth so often ignored when a computer comes on board?

Path of Least Resistance

In first applying a DP system to a small business, users tend to fit the problem into the available solutions and to follow the path of least resistance. This leads in many cases to a misapplication of the system's potential.

It is unfortunate that the applications which are easiest to implement are the ones that will result in the least improvement in productivity. The greatest potential for savings lies with applications that are complex and intractable.

When a computer is installed, management will want immediate results. The accounting applications (which probably helped to sell the computer in the first place) are available, and accounting personnel are usually eager to relieve themselves of present, non-

(Continued on Page SR/4)

Small Business Systems Seen Generating New Profits, Risks in Next Five Years

By Greg Leveille
Special to CW

Over the next five years, technology, more than any other factor, will have a profound effect upon the small business computer industry.

Small business problems and the need for economical DP solutions have always existed; but only recently has the small business computer begun to exist as an affordable solution for that great mass of smaller firms — mostly because of the rapidly declining cost of technology.

In the next five years, the average cost of small business computers will rapidly decline even though the level of systems performance will constantly improve. During this period of change, a plethora of new vendors and products will emerge; but the risk of failure will be high.

This article was adapted by permission, from the May/June Interactive Computing, *the Association of Computer Users (ACU) newsletter.*

The average end user will receive much more bang for his buck, although many end users will get stuck with a poor product choice. Without doubt, the small business computer will become a commonplace business appliance.

Future small business computer price/performance ratios will be affected by new advances in many different DP technologies.

A small business computer system is nothing more than a large business appliance, constructed from numerous smaller components. These parts include semiconductor components, computer memory, microprocessors, printers, data storage peripherals, data communications devices, CRT terminals and software.

	System/3	**System/38**
Model	15D	5481
Main Memory	256K Bytes	512K Bytes
Mass Storage	90M Bytes	130M Bytes
CRT Displays	1	1
Line Printer	600 line/min	650 line/min
Purchase Price	$281,000	$94,000

Figure 1. System/3 vs. System/38

In each of these areas, new developments are producing performance increases and cost reductions. Future developments will include:

- *Semiconductor components.* Chip density and performance improvements are constantly occurring as a result of a better understanding of silicon, the predominant semiconductor material — and by the application of new techniques in materials, processing, tooling and packaging. Meanwhile, production costs are on the decline.
- *Computer memory.* Based on advances in semiconductor technology, small business computer memory units continue to provide faster memory access and memory cycle times and consequently minimize the effects of information movement within the system. Random-access memory, which now costs around 8 cents per byte of information storage, will only cost around 1 cent per byte in 1983.
- *Microprocessors.* Also based on semiconductor components, these logic devices are becoming more intelligent and powerful while slightly decreasing in price. By 1985, these devices will process as many as five times more machine instructions per second than they do today.
- *Printers.* Many new exotic technologies will be applied to create a wide variety of printers with each type filling a different price/performance niche in the market. These new printer products will employ technologies such as thermal printing mechanisms for heat-sensitive paper, electrosensitive printing mechanisms for special chemically coated paper, laser beams, optical character recognition and ink jet guns. During the next several years, average printer prices will decline by at least 40%.
- *Data communications devices.* Currently, the movement or communication of data between computers normally takes place relatively slowly (2,400- or 4,800 char./sec). By 1983, very high speeds (9,600- to 56,000 char./sec) will be the norm — often as a requirement for interfacing with the faster computers.
- *CRT terminals.* The design emphasis of most vendors is on making the

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Mini Speeds Real Estate Closings for Law Firm SR/16
Auto Dealer Boosts Sales, Inventory Turnover.......... SR/17

Profits, Risks About to Grow In Systems Area

(Continued from Page SR/2)

CRT more friendly and intelligent. CRTs will, in effect, become the head or face of the small business computers of the 1980s. They will be able to ask a wide range of simple tutorial questions, sometimes audibly, to which the operator will be able to respond with a slight depression of a single key. The confusion and mystery that normally surrounds the installation of a new computer will be considerably reduced.

• *Software*. In the next five years, the number of software tools for any one system will probably triple. Furthermore, each new succession of tools will be more powerful and easier to use than the last.

As a result of these expected advances in technology, small business computer vendors will be able to offer the users more powerful systems for less cost.

Price/Performance

Announced last fall with first shipments scheduled soon, IBM's System/38 will reportedly deliver about three to four times as much performance as its predecessor, the System/3 [CW, Oct. 30].

Moreover, System/38 configurations sell for as little as one-third the cost of System/3 configurations. Summarized in Figure 1, this comparison of IBM products epitomizes the price/-performance improvements expected to occur in the years ahead.

Lower price/performance ratios for small business computers are not only prompting most current users to expand their usage of small business computer devices, but these new ratios are attracting many new sales prospects.

Every year, as the cost of technology decreases and the cost of labor increases, new sets of small business functions become more economical to automate than to leave unautomated.

Because of these variables, the majority of current users are accelerating their usage of small business computer techniques. This acceleration is only somewhat retarded by a shortage of available time, people and financing. It is well known that more than 60% of the annual revenues of the largest small business computer vendors is derived from add-on-value orders from previous customers.

Newly Affordable Systems

A very small business with annual revenues on the order of $250,000 normally cannot afford more than a 2% ($5,000) annual expenditure for a computer system. Several years ago, a $5,000 small business computer simply did not exist. Yet, in the last 12 months, at least 10 vendors introduced a $3,000 to $10,000 system. By 1983, at least 50 major vendors will have such a system available.

'Of Course the Material You Want Is In Here — Someplace . . .'

The increase in market demand for small business computer products has resulted in an unparalleled increase in the number of systems suppliers. Five years ago, there were less than 50 vendors.

At year-end 1979, there will be more than 300 active participants, including manufacturers, system integrators and retail outlets. By 1983, there should be at least 600 competitors.

In addition, in an effort to remain competitive and to create a captive market from their base of installed users, every vendor will attempt to establish a very broad product line.

Looking Ahead

The next five years will present significant opportunities and risks for both vendors and users of small business computers. In 1978, 58,000 small business computers were shipped worldwide; but during the 1979-1983 period more than 814,000 small business computers priced in the $5,000 to $100,000 range will be shipped to new and existing customers.

The competition for business will be fierce, and many of the small business computer suppliers in business today will not be in business in 1983. Likewise, during this period of transition many unsuspecting users will acquire an inadequate system.

Supported by rapid technological developments in performance improvements and cost reductions, the years ahead promise a high potential for success as well as for failure to vendors in this marketplace. With success comes profit, and with failure comes experience, as the small business computer industry moves into its most dynamic growth period ever.

Leveille is a senior research analyst with Creative Strategies International of Palo Alto, Calif.

PROJECTED IMPACT OF NEW TECHNOLOGY ON SMALL COMPUTER USERS AND VENDORS

1979 — 1983

Benefits For Users

- More System for Less Money
- Wider Choice of Vendors
- Wider Choice of Products
- More Powerful Software
- More Learning Tools
- Greater Understanding of SBC s
- Easier to Automate with SBC s
- Lower Entry Level Costs
- Incremental Growth Path

Drawbacks For Users

- Too Many Vendors
- Too Many Products
- Too Many Decision Criteria
- Hard to Separate Fact From Fiction
- Longer Decision Cycles
- Susceptability To Poor Decisions
- Short Supply of Skilled Personnel
- Rising Cost of EDP Labor
- Difficult To Change Vendors
- Complexities of Long-Range Planning

Benefits For Vendors

- Increase in Computer Speed
- Increase in System Capabilities
- Smaller SBC Components
- Decrease in Manufacturing Costs
- Increase in Economy of Scale
- Greater System Reliability
- Lower Maintenance Costs
- Increase in SBC Market Demand
- Price Elasticity
- New Markets for SBC Products

Drawbacks For Vendors

- Increase in Number of Competitors
- Increase in Number of Competing Products
- Increase in Rate of Market Change
- Variety of Distribution Methods
- Vulnerability of Installed Base
- Harder To Increase Market Share
- Longer Pre and Post Sale Periods
- Increase in Marketing Overhead
- Limited Supply of High Tech Components
- Limited Supply of Trained Personnel

Source: *Interactive Computing*

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TERMINALS, INC

Why Not Throw in CPU Free?

Business Systems Crying for Better Software

By Donald R. Shaw

Special to CW

The *Computerworld* issue that solicited this commentary also carried an article announcing a Randal Data Systems, Inc. "very small" business computer selling for less than $12,000, complete with software [CW, May 14]. For that price there has to be a catch, and there is. The article went on to say:

"Unlike most other small business systems vendors, Randal plans to provide no customized application packages for its System 5000 users. Instead, it will offer only canned application software and require its System 5000 customers to 'change their businesses to fit the package rather than vice versa' . . .

"In this way, Randal will spare its desktop system users the heavy expense of going to an outside service firm to have application packages personalized."

And, of course, this will also spare users from having systems that meet their exact requirements, which, in my judgment, is hardly a step in the right direction. I put this illusion, that the small businessman can make productive use of somebody else's idea of a generalized package, unmodified and unembellished, in the same category — although one step more ethical — than the "you-can-program-it-yourself" package.

The vast preponderance of small businessmen know absolutely nothing about systems analysis, design and programming. To convince them, on the strength of an easy-to-program language processor, that they can undertake a do-it-yourself automation project in their own businesses is equivalent to telling a neophyte home buyer he can design and build his own house in his spare time while fully employed as, let us say, a computer programmer.

True, a few programmers have hidden architectural and construction skills, and a few of these might have strong backs and lots of spare time; most, however, will want homes built by professionals and to their specifications, not for the hypothetically "average" family.

More, Not Less

Making small business computing systems cheaper by shorting the user on essential "peopleware" is a grave disservice to an unwary marketplace desperately in need of *more* rather than less, service.

Systems currently on the market require more tailoring, not less. Users need more training and problem-solving assistance than they're presently getting from software and systems vendors, not less. Users require more on-going program maintenance and modification than they're now able to get or perform for themselves, not less.

So who's kidding whom about reducing costs in small business systems by stripping away essential professional support and vitally needed adaptability?

The answer to making these systems less costly and easier to install and maintain is in better *packaging* of the necessary support — cramming more and better support, with a greater range of capability and easier customization, into a less expensive framework.

For example, software packages like those available from IBM for the System/32 and System/34 and from Univac for the BC/7 are definitely on the right track. These parameter-driven systems, within clearly defined limits, allow a great deal of customization *without programming*, and they're beautifully documented and supported with effective canned training programs.

There are lots of situations where these particular computers and their generative software packages don't fit, but the concept is the correct one. Many software developers are beginning to follow suit, and undoubtedly still others will do so in the future.

Instead of trying to sell a "naked" microcomputer off the shelf together with a Basic interpreter and a 75-page instructions book for $5,000, why not give the computer away free as companion to a beautifully crafted $20,000 self-generating, self-documenting and self-teaching universal software set? This would triple revenues and profits and leave a trail of happy, productive users in its wake, instead of the present growing chorus of disgruntled, disappointed 'do-it-yourselfers who wish they'd spent more and got more.

Are you afraid that such a package wouldn't sell in the face of low-ball competition? Since when don't quality, reliability and low-risk characteristics sell at higher prices?

Small computer systems are already so low in cost that any system available for half or even a tenth the cost of its competition, but coming with a risk of lost control over receivables or inventory or a risk of unpredictable halts in service to customers, has a clear disadvantage on the market.

Users are convincing the small business computer industry of this fact every day.

Shaw is president of Business Counselors, Inc. in Parsippany, N.J., a consulting firm addressed to data and word processing.

Productivity Not Boosted By Automation Alone

(Continued from Page SR/2)

automated tasks. Since they are already using accounting procedures, there is no great resistance to the computer.

It is not surprising that the accounting applications are usually the first to be implemented. Is it surprising that many simply stop at that and never see more than a fraction of the computer's potential benefit?

Beyond Accounting Functions

In production, or operations, things are different. There may be no "system" at all, very few records and much informality. The computer is often seen as an unwelcome intrusion.

This is also an area where good general application software packages are not available. If you have such a package for your computer, chances are it will require much modification before it will be useful. It was probably written for someone else's business, which may or may not be the same as yours.

Although the accounting applications do result in more *efficient* operation of the accounting department, they usually do not result in much productivity improvement. The reason is that the cost savings are marginal and do not offset the added cost of the computer.

Although it is possible to improve productivity by reducing administrative and overhead costs, the amount of the reduction will be less than was hoped. Staff reductions, the largest component of controllable overhead, generally don't happen at all; and in many cases there are staff increases.

Except for accounting firms, the automation of the accounting functions alone will not result in increased productivity.

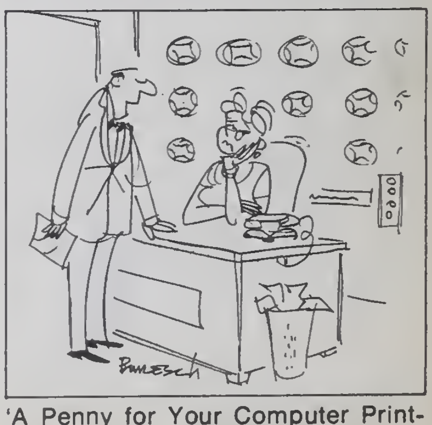
Productivity increases must come from an attack on the direct costs of production. The computer's potential must be applied to the conversion process itself.

Again there is a paradox: those applications that have the greatest impact on direct costs tend to be the most difficult to implement. Extensive modification or complete custom designing is required, and development may take a year or more.

Considering the intrinsic difficulty of implementing these applications and the resistance by front-line managers, it is easy to understand the high failure rate of computer applications in the operations systems.

Productivity improvement requires continuing support from top management to establish its objectives and to keep the effort focused on productivity.

Kauffold is the president of PK Systems, Inc., a firm located in Normal, Ill., that provides manufacturing applications software and consulting.



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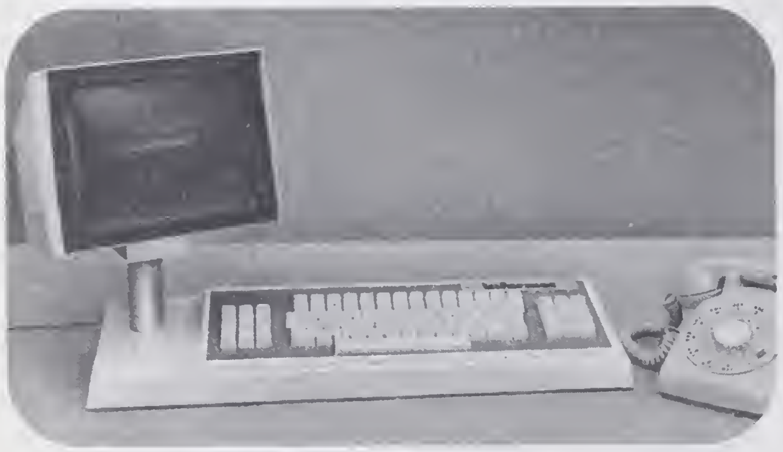

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A few comments about planned obsolescence in business computers:

Fact: Once a small firm buys a small business system, it quickly learns that it could benefit from more performance.

Theory: This ought to be great for the manufacturer and dealer. The customer has to scrap his first computer system and buy a new one.

Fact: That's the way most computer manufacturers operate. They offer a family of models, each substantially more expensive as the user upgrades.

Common sense: Expanding performance by buying a more expensive system is a costly way to go. It violates common sense. Small business firms understand the cost of planned obsolescence. They don't like it.

More common sense: It's time someone solved this problem with a small business system that can grow as the user's needs grow—easily and inexpensively.

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More fact: This is easily demonstrated. When the user wants more performance, he simply calls his dealer—and the dealer just plugs in the performance. Plug-in expansion—that's the Lockheed System III. Saves money, saves time—saves lots of both.

Good-news fact: The Lockheed System III has an RPG II compiler that makes it highly compatible with IBM and other brands. It's easy to replace the limited-performance system the user now has with an expandable Lockheed System III.

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More common sense:

Shouldn't you scrap planned obsolescence in computer systems? Call W.W. McCaffery toll-free at (800) 526-7555 or drop him a line. Or attach your business card to this ad and mail it in. Lockheed Electronics, 1501 U.S. Highway 22, C.S. #1, Plainfield, New Jersey 07061.

Lockheed System III

No Price Tag on Productivity

Saving Money the Wrong Reason to Buy a Mini

By Jon R. David
Special to CW

FORT LEE, N.J. — Most companies that do not already have an in-house business minicomputer system are looking into getting one. The ever-increasing demands of operating a business make such systems necessary, and their price makes them affordable.

After investigating minis, companies frequently decide to install an in-house system. They make such a decision for a variety of reasons. Not all of these reasons, however, are good ones.

The most popular reason for obtaining a minicomputer system is probably the saving of money. For example, a company may have five people doing bookkeeping and may also be using an outside computer service that costs $1,000 a month. An in-house system for $2,000 a month would replace two people and the outside service, thus saving the company money.

Wrong Reason to Buy

Although saving money cannot be faulted, it is the wrong reason for buying a minicomputer system.

The contemporary minicomputer has the inherent ability to perform millions of internal operations per second, access billions of characters of current, recent and historical data, print output at thousands of lines per minute and respond to dozens of users concurrently. If one justifies the purchase of a computer merely on the basis of cost savings, one has to ignore many of these capabilities, since implementing them would increase a system's cost.

Continuing with the above example, the $2,000-a-month system, replacing two bookkeepers and the outside computer service, might contain 10M bytes of disk storage, two CRT terminals and a medium-speed printer. This configuration would be obtained with only the bookkeeping programs required to effect the money-saving replacement.

> *'The goal of obtaining current and correct information and control should be the main reason for obtaining a minicomputer system. Rather than keeping a system at its minimum, users should look at all ways in which a system can be of help to them.'*

Greater disk storage, additional CRT terminals, higher speed printing and/or additional programs would all increase the price of the replacement system. They would also increase the productivity of the system, and bring us more in line with the reasons a computer system should be obtained.

The costs involved in bookkeeping are most frequently fixed and comprise only a small percentage of a company's expenses. Increases in productivity, better servicing of customers and proper control of one's entire operations can readily produce savings and/or income increases well beyond the relatively small monies associated with bookkeeping.

In addition to their financial advantages, such features may be necessary merely to sustain a company's continued successful operation.

The obtaining of current and correct information and control should be the main reason for obtaining a minicomputer system. Rather than keeping a system at its minimum, users should look at all ways in which a system can be of help to them.

Once the decision has been made to obtain a system, huge increases in system utilization are available for relatively small cost increases.

In our $2,000-a-month example, expanding the system to eight (rather than two) CRT terminals, 100M (rather than 10M) bytes of disk and two high-speed (rather than one medium-speed) printers might increase the cost $1,000, to $3,000 a month. It can immediately be seen that such an increase would allow four times the number of concurrent users, 10 times the data storage and well more than twice the printed output.

Useful Capabilities

A bookkeeper with a terminal need not spend hours every day commuting to and from a file cabinet. A salesman with a terminal will know what is and isn't available to sell. Production will know what is needed and what's being done. The receiving department will know what is due in. Shipping will know everything scheduled to go out.

Each of these areas would use one of the additional CRT terminals. Moving from 10M to 100M bytes of disk means the system can retain significant current and past data for the purposes of comparison and analysis. The increased printing ability virtually eliminates contentions for printed data and makes additional output more feasible.

The expanded system can provide current (year-to-date) and historical (this year vs. last year) sales analysis, production requirements and status information, inventory and other control and inquiry into any and all computer files. Reports of both repetitive and demand natures can be obtained quickly, so hardcopy backup becomes feasible.

Instead of minimizing system requirements, such an approach maximizes system utilization. Sales has the information to intelligently deal with its customers. Production knows what is required and when it is required, and it is immediately alerted to any problems.

All facets of company operations are treated, so things are always verifiable and in balance. In the event a component such as a CRT terminal or printer becomes temporarily nonoperable, its loss can be sustained with minimal impact to the system.

In our example, a 50% cost increase yields a 400% usage increase. In addition, the expanded usage enables a company to better function in areas of productivity and control. Until one can put an exact dollar value on current and correct sales, production, inventory, credit and other information, the true value of such a system cannot be accurately determined.

It should, however, be obvious that this type of system, which provides greater and more accurate productivity, information and control, is "better" in all ways except absolute cost. It is clearly more cost-effective.

This does not mean that everything should be treated by an in-house business minicomputer system. Certain functions do not belong on a computer at all; others either generate more work than they save or are simply not worth the cost of treating them.

As long as the work being done by an in-house system is viewed in terms of increased productivity and better service to customers, with a keen eye kept on cost-effectiveness, an intelligent system can be obtained.

David is vice-president of Systems R&D, Inc. in Fort Lee, N.J.

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Tennessee Municipalities Gain DP Autonomy

By Donald F. Norris
Special to CW

GERMANTOWN, Tenn. — Like many of the nation's smaller but rapidly growing cities, Germantown has begun a transition from dependence on service bureaus for DP resources to self-sufficiency with its own computing facilities.

With a current population of just under 18,000 and an annual growth of about 2,500 persons, this community in Tennessee's suburban Shelby County is now spending about $16,000 annually on DP. Service bureaus have supported such DP applications as budget and accounting, tax billing, utility billing and payroll.

But Germantown experienced problems with the service bureaus. After analysts projected that continued servicing would cost the city $137,000 in five years without significantly improving DP quality, the city administrator, city comptroller and board of aldermen began considering systems acquisition — either as a solitary venture or as a shared facility in conjunction with neighboring Shelby County communities.

At about this time, Germantown was selected to participate in the Tennessee Innovation Group, a project funded by the National Science Foundation to help Tennessee cities implement sophisticated technology. The group is now focusing on methods to establish in-house minicomputers in small and medium-sized communities.

Feasibility Study

Through the Innovation Group, the feasibility of using minicomputer technology was evaluated for the city of Germantown along with its neighboring cities of Bartlett and Millington. The study attempted to determine whether:

- Germantown needed its own computing capability.
- An in-house computer for Germantown would be cost-effective.
- It would be cost-effective and/or politically feasible for Germantown to share a computer with either one or both of its neighboring cities.
- It would be feasible for Germantown to share software with its neighboring cities.
- It would be feasible for the three communities jointly to support a programming specialist to assist them with their system operations.

The study concluded that it would be most feasible for each city to acquire its own in-house minicomputer and for all three cities to share in the purchase and maintenance of software. The study also recommended that, by using a carefully prepared contract to acquire software, the communities would not need to hire a programmer.

As a result of this study, Germantown decided to acquire in-house minicomputer hardware with computing capabilities sufficient to meet immediate management needs and needs anticipated to arise in the five years ahead.

The system Germantown is acquiring will cost about $140,000 for puchase and maintenance of hardware and software only (and not including personnel costs). However, Germantown expects to improve the productivity of existing personnel and to avoid hiring the additional personnel that would be needed if the city had not elected to buy its own system.

The Innovation Group study has advised Germantown to automate the following applications during the first 12 to 15 months after acquisition: integrated financial management, utility billing and services, personnel/payroll, business taxes, city auto stickers and police records for report-generating.

Thereafter, depending on the three cities' specific requirements, a number of procedures will be automated to support Germantown's police, fire department, public works, parks and recreation department, building permits and inspection records.

Although the cost of Germantown's minicomputer will be amortized at a rate comparable to the city's current

(Continued on Page SR/14)

Item	1979	1980	1981	1982	1983	Total
Projected Costs — Present DP System	$15,000	$17,250	$19,800	$22,813	$26,000	$100,863
Additional Cost Required To Improve Utility Billing System	36,000					36,000
					Present System	$136,863
Minicomputer	$28,000*	$28,000	$28,000	$28,000	$28,000	$140,000

(* $15,000 hardware; $13,000 software — total costs $75,000 hardware; $65,000 software)

DP Cost Comparison for Germantown, Tenn.

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Relies on Minis

City Agency Automates Management Planning

By Mark Shapiro
Special to CW

NEW YORK — The Office of Management Planning (OMP), a staff unit within the New York City Human Resources Administration (HRA), has spent several years developing and implementing an agencywide management planning and control system that relies on minicomputers to provide a valuable source of operational and administrative information.

Specifically, the planning system identifies the management goals of each of the social service programs and support organizations and how they are to be achieved in the coming fiscal year. From this, mechanisms — performance indicators and improvement projects — are developed for tracking the accomplishment and success of these goals.

The Office of Management Planning (OMP) collects this information and prepares various management reports which go to HRA executive personnel as well as to the Mayor's Office of Operation.

As Thomas Jones, OMP director, put it, "We were faced with an ever-growing demand for greater quantities of information and expanded interpretation and anlysis." The office needed a solution to the increasingly heavy manual burden placed upon a small number of analysts and support staff.

More and more of the analysts' time was spent in collecting, organizing and preparing the information for report issuance, leaving little time for analysis. A means was needed to reduce the time spent by the professional staff in performing clerical functions.

System Improvement

A system study was conducted. Having identified the problems just described, the objectives for system improvement were defined. These are:

- To reduce the amount of clerical and production time spent by the professional staff in preparing the data and producing reports.
- To ease system operation and maintenance.
- To make the system consistent with, or improve upon, the methods by which management information is collected, computed and reported.

Word processing was briefly considered. However, after carefully examining the present system, the management information and the types of reports required, it became evident that the inputting, updating and processing of this data could be better handled by the capabilities of a small computer system.

The agency had just acquired several small computers from the Q-1 Corp., and OMP was able to secure one by documenting a well-designed, justifiable series of applications.

Three Phases

OMP decided to automate its management information system through three design/implementation phases. Phase I would deal with the performance indicators, Phase II would be a project control system for the improvement projects and Phase III would be a data analysis package.

Phase I has recently been implemented and processes all performance indicator statistics. Performance indicators track the progress of management goal accomplishments over the course of the year as compared to committed planned targets.

At the beginning of each processing period, the Performance Indicator Tracking System (the "Pits," as it is affectionately called in the office) produces a "turnaround form" that lists all the performance indicators associated with an organizational unit as well as that period's planned target statistics.

These forms are distributed to the program and support organizations for entry of actual indicator data, then returned to OMP.

Data Entry, Reports

Menu formats and screen prompts allow an operator to interact with and operate the entire system so that data entry and report production can be performed easily, quickly and accurately.

The edit routines and verification procedures were designed to ensure that the performance indicator records are correctly updated with the appropriate information.

The small computer system that runs Pits consists of 32K bytes of memory, 2M bytes of floppy disk storage and a 45 char./sec printer.

Pits has resulted in an estimated 20% to 25% reduction of professional time spent dealing with clerical functions connected with the preparation of this management data. This time is being redirected toward analyzing the information so as to better understand and depict the level of an organization's service provision and internal operations.

In addition, creating a computerized data file of performance indicators now facilitates the retention, access and use of this management information in a more responsive manner.

Within the New York City Human Resources Administration, Shapiro is the systems manager for the Office of Management Planning.

Peugeot in sixty days."

"There was no need for either accounting or data processing to compromise with either system. Prior to choosing Software International, we surveyed their customers and our 'Big 8' auditors, and were well-satisfied with reliability, field support and system performance.

"Preparing for anticipated growth in the U.S. market, Peugeot recently completely reorganized its field operations. Changing from seven regions to three zones meant realigning our reporting system to the new organization. Within 24 hours, the General Ledger provided us with necessary management reports without skipping a beat."

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Mini-Based Time-Sharing Aids Personnel Work

By John R. Phillips

Special to CW

Personnel departments of small-to-moderate-sized companies used to stand last in line to receive computer support. But today, in growing numbers, they have it on demand through a recent development in minicomputer technology — time-shared systems which no one user can justify, but whose cost all can share.

Operating as commercial services, the dedicated minicomputer-based systems provide, via remote terminals and printers, complete on-line human resource information and report preparation support. This includes most personnel functions, which are frequently provided with greater cost and difficulty by large corporate batch-oriented central systems.

Typical of the new systems is the nationwide InSci/80 Remote Service introduced by Information Science, Inc. Its charges are directly geared to the sizes and needs of its users and range from half to less than one-third of the $75 cited in a 1977 survey as the average annual cost of corporate personnel recordkeeping per employee. (That figure is now crowding $100 and is forecast to approach $200 by 1983.)

Large corporations try to hold down rising personnel recordkeeping costs by only partially supporting some of the functions performed for shared system users. This can be a false economy since replacing middle-echelon exempt personnel, such as second-line supervisors, typically costs more than $10,000. Use of the system can easily pay for itself, just by permitting costless replacement of exempt personnel.

Large-Scale Control

Among the largest InSci/80 users is the Missouri Farmers Association, which has 2,000 employees statewide. According to Eric Thompson, manager of employee relations, the remote service has prevented "significant" staff expansion to manually handle all personnel records.

Previously, the diversified agricultural cooperative, which has more than 160,000 farmer members and sales in excess of $600 million, maintained central records only for key staff and executives.

The Missouri Farmers Association also enjoys new planning and administrative capabilities. It plans to greatly expand information in employee records, including skills, education and Equal Employment Opportunity (EEO) data.

Supervisors can now be automatically notified whenever salary reviews are due. Management, too, receives statistical and analytical reports that were previously unavailable.

At the other end of the user scale is the Central Bank of Florida (Palm Beach), with deposits of $70 million and a staff of 105. It looks to the same benefits as the giant Missouri agribusiness — including the decline in time devoted to the human resource function from that of 1-½ people, including a bank officer, to half the time of a single clerk.

Senior Vice-President Gerry T. Gelsomino stressed "fingertip control" of personnel information. The bank can now comply more effectively with government regulations, while employee skills and experience are cross-indexed by a Talent Library subsystem to help identify the right candidates for open positions.

Nontechnical Users

To be effective, a terminal-oriented, minicomputer-based personnel system must be easy to use for nontechnical personnel, and InSci/80 is. All data on any employee can be readily displayed on eight CRT screens.

Similarly, the system prompts and guides users to define on their terminals complex formulas which are stored for repetitive use.

Automated report-writing and cataloging facilities permit definition of report formats, including EEO report formats. Additional reporting capabilities being considered or developed include payroll, benefits statements, Hay job evaluation system, attendance and position control.

Personnel functions differ from other business applications in their heavy involvement with ad hoc reporting and on-line, on-demand computer activity with access to large data bases. They are better served by user-oriented, interactive minicomputers than by tightly scheduled corporate batch systems.

Cost Based on User Size

The basic charge to personnel system users is on a per-employee-record-maintained basis. For instance, the cost to a 250-employee firm is $3.75/mo per record or $45/year (40% less than the $75 cited in 1977 as an average for in-house personnel recordkeeping and reporting).

On an annual basis, the total cost of automated human resource management is $11,250. This is less than the cost of just one clerk doing summary manual record maintenance.

Costs go down as user sizes go up. A 500-employee company pays $2.56/mo per employee or $36.72/year. The charge also covers maintenance of additional data on 100 terminated employees and processing information on 250 job applicants.

At the 1,000-employee level, the monthly cost per record declines further to $1.95. It covers two terminals and one 65 line/min tabletop printer, records for 250 inactive people and

(Continued on Page SR/14)

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Turnkey Turns the Trick for Mail Order Firm

By Ken Young
Special to CW

MADRID, Iowa — Federal Prescription Service (FPS) here, a 16-year-old mail order prescription firm that sells maintenance drugs direct to older persons throughout the nation, is beginning to experience some dramatic changes as the result of installing a minicomputer system in July 1978.

The benefits have exceeded expectations and continue to grow. FPS has completed nearly all of its primary applications programs and already it has achieved a 25% reduction in clerical labor costs.

Since it had a labor-intensive system, this represents an immediate net saving of $25,000 per year after taking out the cost of operating the computer.

Beyond this, FPS has been able to reduce its inventory by more than $20,000, reduce clerical and typing errors from approximately 45 per 1,000 orders to less than five — and it's providing the customer with better services than ever before.

FPS' in-house system was installed by a Des Moines OEM firm, Impact Data Processing Services. Under a five-year lease/purchase agreement, Impact provided a turnkey system with software paid for on a current year basis.

The hardware consists of a Digital Equipment Corp. PDP-11/34 processor with 128K bytes of memory, three 14M-byte RK06 disk drives, four CRT terminals, a 300 line/min printer and a 30 char./sec Teletype Corp. printer. The operating system, DEC's CTS-357, runs in a time-sharing environment with programming written in Dibol-11.

Caught in Profit Squeeze

Prior to installing the computer system, FPS was experiencing declining profits because of the increasing costs of labor, goods and postage on the one hand and growing price competition on the other. To improve its profit picture as quickly as possible, it had to either increase sales sharply or cut costs dramatically.

Since the process of getting new customers is slow and tedious in the prescription business and the firm obviously can't sell more to its old customers than their doctors prescribe, FPS decided that perhaps a computer system could give it the cost reductions it desired.

The changeover from a manual system was not without some difficulties and delays, but on the whole it went rather smoothly. The computer was accepted very well by the employees, and most learned to use it very quickly.

As an extra bonus, FPS now has the capability of handling twice as large a sales volume without doubling its direct operating costs.

Order Entry for T/S

The biggest task for Impact's programmers was the development of an order entry program that would operate in a time-sharing mode. Unlike most order entry processes, prescription filling requires spontaneous access to a large number of files.

FPS' files include a customer master file of more than 20,000 records, a drug inventory file of more than 4,500 records and several smaller files. All except the prescription file were created through normal maintenance programs.

The prescription file is created and updated during the order filling process by keying from a coded form that utilizes the information stored in the supporting files by accessing them via their record keys. The prescription record is built and added to the file in this manner with greater speed and accuracy than would be possible by keying all the required information from scratch.

Orders are keyed simultaneously at up to the three CRT entry stations in batches of approximately 10 to 15 orders per station. The operators are guided through the entire process by programmed prompts. Keying is stopped while prescription labels and invoice statements are printed as certain temporary files are cleared.

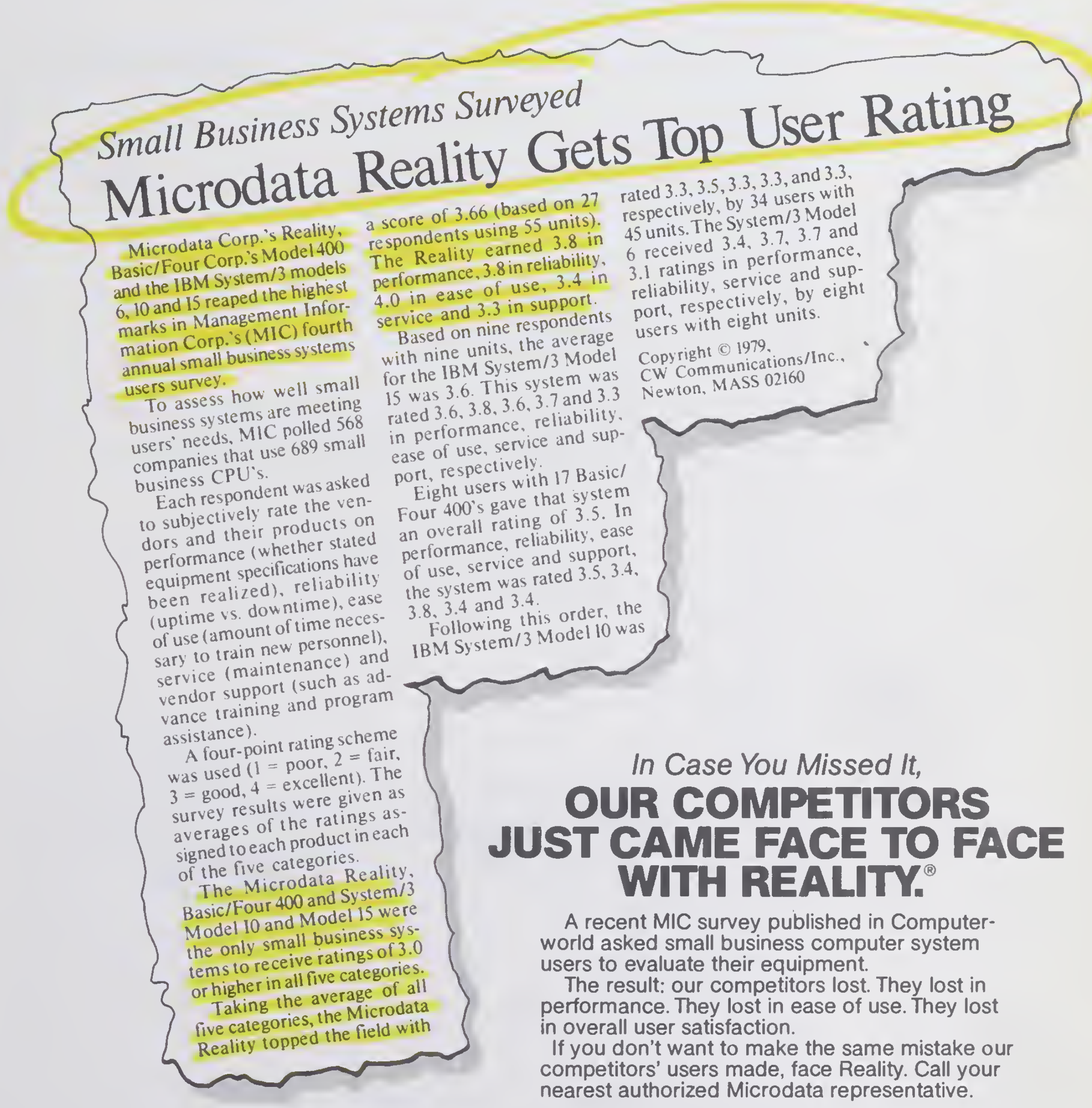
A unique perforated, printed form designed by FPS provides prescription labels, an invoice statement, a customer payment slip, a mailing label and a customer-addressed reorder form.

In addition to the printer output, temporary files are created during order processing — an invoice "image" file, daily sales, prescription journal, drug inventory back orders, and a doctor letter file for use in printing refill request letters. At the end of the day, these files are printed, posted and cleared as required.

Initially, processing time with the computer was greater than the manual system because files had to be built. Once the information was stored on disk, however, the speed and accuracy of the computer was manifest on refill orders. The workload decreased steadily each passing month as a growing proportion of computer-stored prescriptions were refilled.

Next to the Order Preparation Department, the firm's Customer Correspondence Department has experi-

(Continued on Page SR/14)



Small Business Systems Surveyed

Microdata Reality Gets Top User Rating

Microdata Corp.'s Reality, Basic/Four Corp.'s Model 400 and the IBM System/3 models 6, 10 and 15 reaped the highest marks in Management Information Corp.'s (MIC) fourth annual small business systems users survey.

To assess how well small business systems are meeting users' needs, MIC polled 568 companies that use 689 small business CPU's.

Each respondent was asked to subjectively rate the vendors and their products on performance (whether stated equipment specifications have been realized), reliability (uptime vs. downtime), ease of use (amount of time necessary to train new personnel), service (maintenance) and vendor support (such as advance training and program assistance).

A four-point rating scheme was used (1 = poor, 2 = fair, 3 = good, 4 = excellent). The survey results were given as averages of the ratings assigned to each product in each of the five categories.

The Microdata Reality, Basic/Four 400 and System/3 Model 10 and Model 15 were the only small business systems to receive ratings of 3.0 or higher in all five categories.

Taking the average of all five categories, the Microdata Reality topped the field with a score of 3.66 (based on 27 respondents using 55 units). The Reality earned 3.8 in performance, 3.8 in reliability, 4.0 in ease of use, 3.4 in service and 3.3 in support.

Based on nine respondents with nine units, the average for the IBM System/3 Model 15 was 3.6. This system was rated 3.6, 3.8, 3.6, 3.7 and 3.3 in performance, reliability, ease of use, service and support, respectively.

Eight users with 17 Basic/Four 400's gave that system an overall rating of 3.5. In performance, reliability, ease of use, service and support, the system was rated 3.5, 3.4, 3.8, 3.4 and 3.4.

Following this order, the IBM System/3 Model 10 was rated 3.3, 3.5, 3.3, 3.3, and 3.3, respectively, by 34 users with 45 units. The System/3 Model 6 received 3.4, 3.7, 3.7 and 3.1 ratings in performance, reliability, service and support, respectively, by eight users with eight units.

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Reality by Microdata

Menu Planning System Eases Bite of Inflation . . .

Special to CW

LOS ANGELES — A chain of cafeterias serving the metropolitan Los Angeles public for 48 years has implemented one of the first restaurant menu-planning systems to minimize the effects of rapid inflation and skittish agricultural commodity prices.

This method allows menu planners at Clifton's Cafeterias here to enter current commodity pricing information into a small business system and, at the touch of a button, obtain the exact cost for each of 2,500 possible recipes on Clifton's menus.

The Data General Corp. CS/40 business computer system Clifton's installed last year is credited with reducing the time needed to accurately recost every menu item from nine months to about six hours.

The system could save the cafeteria chain as much as $50,000 annually — enough to easily pay for itself and the cost of programming it in three years — besides maintaining the culinary variety that is considered Clifton's trademark.

But it all may not have happened if Clifton's administrative assistant weren't familiar with computers.

Clifton's Cafeterias is a subsidiary of Clinton's Restaurants, Inc., a $12-million company that is growing by 10% each year. It is owned by the Clinton family, involved in California food service since 1888.

The cafeteria chain employs 600 people, offers more than 100 freshly made items daily and serves more than 15,000 customers each day at two cafeterias in downtown Los Angeles and four in suburban shopping centers.

The cafeterias can seat from 260 to 750 people in buildings ranging from one to four floors and offer surroundings ranging from the Los Angeles stock exchange to mountain streams and California redwoods.

Tough Competition

Once a fairly popular and successful phenomenon, cafeterias have faced tough competition in recent years from "fast-food" chains as well as from more traditional restaurants, according to Michael H. Clinton, administrative assistant and unit manager, computer buff and fifth-generation Clinton family restaurateur.

Because of the variety of food offered and the need to control more items purchased, cafeterias are more prone to the effects of both rapid inflation and agricultural commodity price fluctuations than "fast-food" outlets or other restaurants that offer a limited, standard menu, Clinton said.

"Six or eight years ago, for example, inflation wasn't a problem. But now, inflation is more rapid; on agricultural commodities it is running at about 10% to 12% annually.

"In the restaurant business, we are caught in the middle between inflation and the effects of freezes, droughts and food shortages that, for example, can drive the price of a crate of lettuce from $9 to about $18. Meat, fish and poultry prices can and have increased 15% to 20% in less than two weeks," Clinton explained.

With 2,500 recipes that cost $20,000 annually to keep current and that are the result of 20 years' work, Clifton's needed a way to react more quickly to the rapidly changing agricultural market and avoid being consumed by those problems.

"We needed to streamline our manual systems and quickly update our recipes, which have a different selling price at each of the six cafeterias and are based on 800 different ingredients. The only way to keep current was to hire more people or computerize the procedure," Clinton recalled.

Hoping to use a microcomputer for menu-costing as well as more standard business DP functions, Clifton's soon realized that the least expensive computers couldn't handle the enormous amounts of data required to recost its menu.

Menus and Accounts

"To justify our recipes and food-purchase files that alone required five million to 10 million words of description we considered a business system based on a minicomputer

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to handle the food management systems and our accounting functions," he said.

In addition to the food-purchasing and recipe-maintenance aspects, Clinton's proposed system would handle the payroll for 600 employees and accounts payable (functions previously handled by an NCR Corp. 399 accounting machine) and perform the new functions of general ledger and a cash journal.

Mike Clinton and the cafeteria's controller reviewed systems from several companies including IBM, Texas Instruments, Inc., DG and Datapoint Corp.

"DG and IBM were the finalists in our selection process. IBM pushed hard with a System/32 or System/34, but delivery times were far in the future. It was also pushing batch processing instead of the immediacy of interactive DP.

"In addition, IBM's software was prepackaged and it was not encouraging the customized system we needed," Clinton said.

Unique Software Needs

"In contrast, DG put us in touch with good software people from the beginning. In our search, many computer vendors wanted to sell us equipment, but few talked about software. A few, like IBM, wanted us to use 'canned' software that did not apply to our unique needs or do what we wanted," Clinton observed.

"DG suggested we interview a computer software management consulting firm. We met at Stuart P. Orr & Associates, Inc., a computer system development firm also located in Los Angeles.

"Stuart Orr had been specializing in financial and manufacturing systems up to that point and had not worked with the complexities of the restaurant business. However, through its professional problem-solving approach and my knowledge of computers, we were able to bridge this gap.

So Clifton's installed a DG CS/40 small business computer. The interactive computer system is used in Clifton's central office. It includes a 300 line/min printer, four CRT terminals, a magnetic tape drive and disk drives with a storage capacity of 20 million characters.

The CS/40 Model C5 cost $1,500/mo as opposed to the NCR 399's $650 monthly lease. And although the customized software developed specifically for Clifton's operation cost more than $30,000, the money should be recovered in three years from reduced labor, Clinton continued.

Costs Justified

"The monthly lease for the CS/40 is offset by some labor reduction, but the equipment costs are really justified by the management information the new system provides.

"The information should, through better planning, effectively keep food costs lower. If the computer system limits our food costs without forcing us to raise prices by, say, 1%, the system will save us an additional $40,000 annually," he explained.

Before the arrival of the small business system, Clifton's manual systems were effective but grossly inefficient. Each of the six cafeterias had to keep large files of information properly filed and up-to-date, because each restaurant's management could establish its own menu. There were many interim steps required to determine whether each cafeteria could afford to serve a specific recipe at any given point in time.

Now directories that contain only the pertinent information are reissued in their entirety on a monthly basis to all six locations. Only "exception" reports or summary reports that note drastic commodity price changes go to the management of each restaurant as necessary. "It is a much easier way of doing things," Clinton noted.

The system has a number of advantages that are helping Clifton's keep in step with the times. It is providing better and more current information that management can easily use in decision-making. Better management information on food costs in the cafeteria business translates into more interesting and more varied menus.

line of miniperipherals even more attractive."

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City Governments Pleased With DP Autonomy

(Continued from Page SR/8)

annual service bureau expenditures, the mini will go a lot further than the bureaus in answering immediate management needs and providing for additional management capabilities.

Receptive DP Environment

To date, Germantown has faced no real problems in implementing the system. In fact, the environment in Germantown has proved especially conducive to implementation for four main reasons:

- City administrators have consistently supported implementation because they view the system as a means of helping city workers — an attitude the latter seems to appreciate.
- Most city personnel have not had long tenure in their departments and are thus not wedded to "old ways of doing things."
- The city government generally seems committed to improving responsiveness to the needs of citizens as well as to improving the internal flow of management information.
- Strong, effective leadership from the city administrator and city comptroller with support from the Board of Aldermen and the Mayor in directing the implementation process.

The situation in Germantown is unusual. Common implementation problems experienced in other cities include:

- Employee fears of the system — such as fear of being replaced by a machine, fear of the machine itself, fear of change and fear of poor relations between management and the personnel who will use the system.
- Lack of support for DP by local elected officials.
- Pressure from local computer vendors or DP "experts" exerted on the city to induce the acquisition of a particular system model or configuration.
- Lack of adequate understanding by city officials, resulting in acquisition of the wrong type of equipment or of a system without adequate support for hardware and/or software.

Many of these problems can be ameliorated if the city engages an objective outside source — not a computer vendor — to produce an extensive impact study of implementation proposals.

As with many other innovative municipal technologies, the most important factor affecting the implementation of a computer system in Germantown seems to have been the strength of managerial leadership in city government. This leadership indentified problems pertinent to automation and responded to these problems by investigating the potential that the city has for automation.

Further, Germantown officials made sure that a well-conceived, carefully implemented plan for acquiring and operating an in-house DP system was developed. They gave special attention to solving the common implementation problems cited above.

Germantown, Bartlett and Millington have solicited proposals for minicomputer hardware and software. Germantown will probably make its decision on both categories of DP products by no later than mid-September. The city anticipates that hardware will be delivered and the system will be online in at least one functional area by no later than Jan. 1, and expects additional software to be implemented incrementally during 1980.

Except for the smallest cities in Tennessee, the in-house minicomputer is a viable municipal technology. Even in the smaller cities, desktop microcomputer systems can be used effectively.

The computer should be viewed in the same way as the typewriter or the telephone — a tool to assist management — and communities should make decisions to acquire the computer on the same basis as decisions to acquire other management tools.

Norris is project manager of the Tennessee Innovation Group, which is administered by the University of Tennessee's Municipal Technical Advisory Service.

Turnkey Turns the Trick, User Finds

(Continued from Page SR/11)

enced the greatest amount of change because of the system. All requests and complaint letters are researched and answered by this department including those relating to accounts receivable balances.

Types of Mail

Most of the mail processed by the department falls into three categories: price quote requests, detailed records of purchases for insurance or taxes and questions on account balances. Under the manual system, these requests required tedious, time-consuming research and were subject to a certain amount of calculating and typing errors. Now, research and follow-up responses are handled quickly, easily and accurately.

Price quotes, for example, once required the lookup of the drug in an index card file; calculation of price by amount specified on desk calculator; reference to a cross-index file to determine if a generic substitute was available and, if so, at what price; typing of the quotations on FPS' letterhead; and mailing. Now, using a special price quote program, an FPS operator simply enters the appropriate drug key found on an alphabetical drug listing and the quantity specified.

Generates Names, Prices

A price quote message followed by a listing of up to 10 different drugs with their generic equivalents — completely priced — appears on the CRT screen. This information is then printed on the Teletype printer simply by pressing a send key on the CRT. The hard-copy output is ready to mail without further typing.

The time required for researching and typing a price quote has been reduced by at least 75%, while other categories of research have been improved to require at least 50% less time.

Another important activity that was slow to implement and subject to errors was drug price updating. Here, errors of omission directly affect profits. In these inflationary times, keeping up with manufacturers' and wholesalers' prices was totally inadequate under the manual system. Now the mini automatically updates each prescription from the latest prices in the drug master file at the time it is filled. A message is printed on the customer's statement announcing either a price increase or decrease.

Savings Substantial

While there is no way of determining exactly what the computer has saved FPS in this area, it is substantial since the amount FPS pays for drugs has been increasing at an 8% annual rate.

FPS is very excited about what it's experienced so far and is now looking forward to utilizing its computer more fully on other applications such as general ledger, payroll, marketing and pricing strategies.

Young is vice-president of marketing and customer service at Federal Prescription Service.

Minis Back Personnel Jobs

(Continued from Page SR/10)

1,500 applicants and 10 additional hours of system use monthly.

Exclusive Use

Minicomputer systems shared by small companies can also be installed in the personnel departments of larger corporations to serve them exclusively and can be ready to run on user demand. The level at which companies begin to generate sufficient personnel workloads to justify having their own systems is between 2,000 and 3,000 employees.

Fees paid by larger firms which have installed InSci/80 systems on-site reflect economies of scale. Users avoid costs which (not including that of selecting the right system from the more than 300 now on the market) run from $50,000 to $100,000 for hardware. Software development may also cost several times as much.

In addition to fees, the user must pay from $500/mo to nearly $1,000/mo for hardware maintenance and obtain internal or outside ongoing software support at additional cost.

Minicomputer-based personnel systems also enhance security, another major aspect of human resource processing. This enhancement is automatic in a system dedicated to personnel requirements and accessible only through keyboards on personnel department premises.

Almost more important than controlling access is the ability to control and monitor document access and modification of stored data. The system provides complete logging of transactions, with date and time stamps, operator identification, action indicators and "before" and "after" data images.

Phillips is senior vice-president for minicomputer services at Information Science, Inc. in Montvale, N.J.

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Small Systems 'Team' Manages Sporting Goods

Project control plot is generated through terminal and linked to an HP 3000.

Special to CW

SPRINGFIELD, Mass. — About a year ago, Spalding Sporting Goods, a division of the Questor Corp., began a long-term, far-reaching project aimed at improving customer service and inventory control. Previously, Spalding's ability to deliver products on time suffered from availability, timing and accuracy problems.

While the project is far from over, many problems have already been solved with the installation of an on-line system composed of several small, powerful business computers, according to Joe Mitchell, Spalding's head of management information systems (MIS).

"Our new system, made up of three Hewlett-Packard Co. HP 3000 computers, is greatly improving our customer service by giving us better control over stock status, product availability, open order inquiry and sales analysis information," Mitchell said.

"It is also freeing up our quality control staff to further enhance the quality of our products by reducing the manual work required for posting, report writing and hand calculations," he added.

Spalding Sporting Goods, with sales approaching $160 million and approximately 12,000 stock-keeping units, has manufacturing, sales and distribution facilities worldwide.

In the U.S., the company has eight sales regions with warehouses here and in Miami; Dallas; Reno, Nev.; and Indianapolis. Though some warehouses handle products not stocked by other warehouses, by and large they handle the same items but in different quantities.

Regional Inventory Needs

"We stock the warehouses to match the sales forecast in that region," Mitchell explained. "But because the consumer marketplace for sporting goods is so volatile, we need to be able to shift and allocate inventory among warehouses and regions to respond to changing regional needs. To do this, however, each of our warehouses needs to know what the other warehouses have in stock."

According to Mitchell, Spalding's previous batch mainframe computers just couldn't do the job. The combination of paperwork, keypunching, weekly updates, distribution of reports and so on for each region and the headquarters meant that the company had difficulty determining the actual availability of specific products.

Perhaps even more important, the company had no ready means of knowing whether the production of particular items was on schedule.

"The only solution for us was some kind of on-line system that would facilitate our looking from the warehouse all the way back into our production schedule and performance. Without such a system, we were unable to make both the day-by-day and long-range operating decisions needed to provide prompt service in an economical way," Mitchell said.

Study Begins

In February 1977, the MIS department began an earnest study of the kinds of processing capabilities the company needed and of the hardware and software then available.

"Because, like so many companies, we were not strictly regionalized, we needed a system that would give each region access to the inventory of the other regions," Mitchell said. "We could have put a minicomputer out in each of the warehouses, but that would have meant virtually duplicated data bases from warehouse to warehouse, so that each warehouse could query product availability in the others."

After a lengthy feasibility and design study, in which a number of hardware and software features of available systems were evaluated, the company decided to install three HP 3000 computers, with the vendor's DS/3000 to tie the systems together and its Image software for data base management.

"We chose the HP 3000 because it satisfied all our processing requirements," Mitchell explained. "It offered us the sophisticated software we needed to tie the computers together as well as an excellent data base management system. It also provided the hardware reliability we needed."

"We also decided that the most economical and responsive computer configuration solution for us was a loosely coupled multiprocessor system in a centralized location, accessed through terminals in the field. By having several HP 3000 systems tied together in a central location instead of a distributed processing network with smaller minis in the warehouses, we found that we could save about $250,000 in capital costs and still have reasonably fast access to all necessary information," the MIS director said.

Currently, 106 local terminals and 40 terminals in the field access the system through a T-Bar, Inc. terminal switching system that allows terminals to be reconfigured to one or another of the processors in the event of a processor failure. Two of the three computers are used for production work and one is used for program development and is available for production backup.

"This set-up gives us a great deal of flexibility," Mitchell noted, "and overcomes many of the disadvantages of central processing. Compared with having computers and redundant data bases actually out of the field, terminal response time is slower, but what we have gained in flexibility, central control, backup capabilities and lower cost is far more important to us for the foreseeable future."

First Phase Complete

Today Spalding is in the thick of system development. The first phase of this development — providing inquiry/retrieval against existing inventory, order and sales information passed to the HP 3000 from a large mainframe computer — is already complete, as is general ledger and a scientific subroutine library.

The company hopes to have the order-processing system entirely on-line by the end of this year, at which time reliance on the mainframe computer will be greatly reduced. Some of the other systems currently being developed and implemented include materials requirements planning, financial control and sales forecasting.

Meanwhile, in the "war room" at Spalding, management is already making good use of the inquiry/retrieval information now available to forecast next-period sales and thus improve product availability and delivery.

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Mini Speeds Real Estate Closings for Law Firm

Special to CW

VIRGINIA BEACH, Va. — How about a factor of six increase in productivity? That is the improvement reportedly measured by a law firm here since it applied minicomputers to closing real estate transactions.

Byrd, Dinsmore, Evans, Bryant and Sykes, Ltd. is the law firm, and a part of its business consists of closing real estate transactions in this rapidly growing resort city.

In 1978, the firm was operating in the standard fashion: legal secretaries were manually typing the many forms required for each real estate closing from information supplied by the lender and collected by an attorney. Several forms had to be typed with no erasures or corrections, thus further slowing the process.

Faced with a growing workload, George N. Byrd, senior partner, had to decide whether to hire additional legal secretaries. As an alternative, he investigated computerized mortgage closing systems offered by many companies. In Byrd's opinion, each of these systems was either too expensive or deficient in throughput, ease of use or necessary features.

The Right Combination

After seeing a demonstration of a Wang Laboratories, Inc. system, Byrd was convinced that he had finally found the right hardware combination. He began discussions with a local software firm, K&R Custom Software, Inc., to develop a system tailored to the requirements of real estate closings.

The resulting system is the Attorney's Mortgage Package (AMP) and meets Byrd's expectations of increased productivity. Under the manual system, the secretaries required three to four hours to type the forms for a single closing. With the automated system, Byrd has timed closings at 25 minutes from start of initial entry of closing information to the printout of the final required forms. However, the typical time required to prepare a closing is 35 to 45 minutes.

AMP is a highly interactive, screen-oriented system designed to allow the legal secretary to enter and edit closing information while the system automatically performs necessary calculations and formats output forms. A series of data collection displays is based upon the closing form terminology and format set down by the U.S. Department of Housing and Urban Development (HUD).

Sophisticated field and screen control commands allow the operator to enter only the information pertinent to a given closing. Information for each deal is stored on a data file for subsequent recall for any necessary editing and printing.

Document Menu

A document menu permits the operator to select a sequence of one or more forms for automatic printing. The program performs all calculations required for each selected form.

The document includes pages one and two of the HUD closing form; a simple deed of bargain and sale; the Veterans Administration's (VA) Deed of Trust and Note; VA Form 1876; the VA/Federal Housing Administration (FHA) Warranty of Completion; the FHA Deed of Trust and Note; the Federal National Mortgage Association/Federal Home Loan Mortgage Commission Deed of Trust and Note; and an in-house deed of trust and note.

In addition to those standard forms, a unique "junk papers" program allows almost any field to be called up, edited (if desired) and then printed at any desired location on a nonstandard form. This feature allows the operator to prepare forms that are seldom used or are required only for a particular type of closing.

One of the most powerful options in AMP is the check-writing function. This series of programs extracts data from the closing file and allows the operator to edit the extracted information.

The AMP system runs on Wang Laboratories 2200 series systems. A variety of hardware configurations allow each system to be tailored to the closing transaction load of the law firm.

Byrd's system includes a 2200-T CPU with 24K bytes of memory, a dual-diskette drive for program and data storage, a CRT/keyboard console and a daisy-wheel printer which produces typewriter-quality printing. This system stores about 40 closing deals on each diskette and represents a mid-range hardware configuration. Faster processors, larger and smaller disk devices and multiple workstation arrangements are available.

Greater Productivity

For George Byrd, AMP has proved to be a cost-effective answer to his workload problem. He has avoided hiring additional legal secretaries and is closing more deals than before. Moreover, because of his reduced overhead, he has become more competitive in the closing market. Byrd finds that mistakes (and lost time associated with them) are nearly eliminated, last-minute changes no longer present a problem and the lead time for closing a deal is greatly reduced.

Byrd's clients, the mortgage companies and the other attorneys in his firm all seem to respond favorably to computerized closings. Because the system is easy to use, Byrd and his colleagues occasionally edit a closing record and regenerate some forms themselves and, in some cases, even prepare an entire closing.

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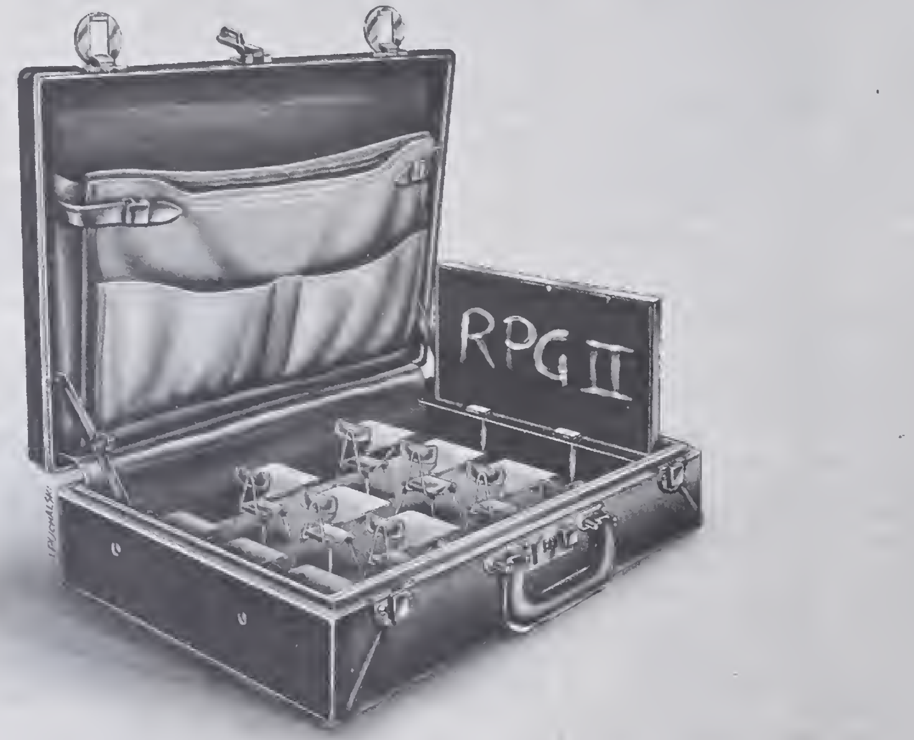

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Expectations Exceeded

Auto Dealer Boosts Sales, Inventory Turnover

Special to CW

ELMHURST, Ill. — Two years ago, when automobile dealer Long Chevrolet installed a small business system, it anticipated that the system would boost parts sales and increase product turnover. Those expectations have been met — and exceeded.

At a recent dinner party, Long's general manager, Sid Mallory, and his staff were honored by General Motors Corp. representatives for having attained their goal of $1 million per month in parts sales.

According to Mallory, sales of $1 million in one month would have been next to impossible without an effective and reliable computer system. Long Chevrolet manages its large data base with Automatic Data Processing, Inc.'s (ADP) "On-Site Service," which consists of a 32-terminal, 128K-byte Microdata Corp. Reality processor with 150M bytes of mass storage, plus software from ADP.

According to a Long Chevrolet spokesman, the data base supports a typical sales volume of 3,500 cars or trucks per month, the servicing of 250 to 300 cars daily and the maintenance of 2,000 new cars in stock at all times.

On-site service also maintains a general ledger and a payroll application for more than 500 employees. In addition, the mini-based system processes the parts and history of all repair orders and does file updating and customer invoicing for the company's 24-hour, five-day-per-week service department.

Mountains of Data

"The parts department is but one example of how the Microdata/ADP system has contributed to our ability to handle mountains of data," Mallory said.

Long Chevrolet uses the system to maintain an ongoing inventory of 20,000 parts numbers. Each time a part is sold, the computer instantly deletes it from stock and automatically reorders when the stock gets low.

If a customer requests a part that the dealer doesn't carry, the order is prepared on one of the system's CRT terminals, creating a list which can be sent to the General Motors warehouse in Chicago to be filled.

Bob Caracello, parts manager, estimated that his 40 employees can perform their jobs in one-third less time using the Reality/ADP system.

"Everyone uses it, from clerical and counter personnel to management. The system is extremely easy to learn and, although ADP Inc. trained us during the start-up, I would say that the majority of our people are now training new employees themselves," Caracello said.

Long Chevrolet had outgrown its first computer system, and prior to installing on-site service had been trying to manage its huge data base using manual methods.

Initially, when the Reality/ADP system was installed, a 64K-byte main memory/50M-byte mass storage configuration was sufficient. In the two years since, the system grew to its present 128K-byte/150M-byte size, with one 300 line/min printer and 32 interactive terminals. A supplier of computer services especially for automotive dealerships, ADP designed four major software applications to run on Microdata's Reality system. These applications include parts inventory and invoicing, accounting, payroll and sales/service merchandising.

The Reality system provides Microdata's English programming language, which was designed to allow virtually natural language query, and software development that reportedly requires little user training and lends itself to customization by the user.

Saving Time

Long Chevrolet has taken advantage of this flexibility. Formerly time-consuming reports such as operating schedules, daily and monthly sales analyses, productivity ratings, inventory turnover and parts flow reports are now available in a matter of seconds.

"Time is probably the biggest savings," according to Caracello, and the ability to maintain an ongoing inventory was an important consideration in the choice of a system.

"For the first time, everyone in the parts department has faith that what the computer shows is in inventory is really there. Every time a customer would call in an order, we used to have to turn back to the parts warehouse to see if the required parts were in stock. Now we simply type in the part number on our computer terminal and we instantly are shown the inventory status of any item," Caracello said.

"If the order is placed, our system creates a picking list and a properly priced invoice for the customer. I honestly don't know how we survived before we installed on-site service," he added.

Expandability, speed and reliability are certain to remain high priorities, particularly if Sid Mallory's predictions for the coming three to five years are correct. Total revenues for Long Chevrolet are now in the $200 million per year range, and the 1979 parts department forecast is $8 million in sales.

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In Datapro Survey

Users Rate Modcomp, Prime Minis High

By Tim Scannell
CW Staff

DELRAN, N.J. — At least two of the hundreds of small business computer users polled in a recent Datapro Research Corp. survey don't necessarily feel that the minicomputer grass is greener in the other companies' yards.

According to the survey conducted last year, users of Modular Computer Systems, Inc. and Prime Computer, Inc. minicomputers have greater overall satisfaction with their machines than the users of 16 other competitive mainframes. The survey lists the responses of 509 minicomputer users, representing a total of 1,344 installed systems.

Datapro initiated the survey to find out just how satisfied with their machines small business system users were and how they felt about the minicomputer circus in general. Although only several hundred responses were deemed usable in the final report, the research firm mailed questionnaires to 10,000 of its subscribers, asking them to rate their systems as excellent, good, fair or poor in 12 different categories.

Number weights — the highest being 4.0 — were assigned for each rating and the categories included ease of operation, reliability of the mainframe, reliability of peripherals, responsiveness of maintenance service, effectiveness of maintenance, technical support, operating system, compilers and assemblers, applications programs, ease of programming, ease of conversion and overall satisfaction.

User ratings on the various categories were based on at least five user responses, Datapro explained.

Low Scorers

The vendors that received low marks in overall user satisfaction were Hewlett-Packard Co. for its 2000 series machine; Data General Corp. for its Eclipse S/200 series; General Automation, Inc. for the SPC-16 system; and Digital Equipment Corp. for an unspecified computer model. Twelve users, representing 35 HP, DG and GA systems, gave their computers a 2.3 in the satisfaction category, even though all three issued fairly high marks for ease of operation, reliability of maintenance and reliability of peripherals.

On the other hand, the unidentified system from DEC received the lowest user satisfaction rating; coming in at 2.0. In addition, although the phantom computer scored a 3.5 in ease of operation, the users rated it a 2.0 in reliability of maintenance, a 2.0 in technical support and a low 1.0 in both applications programs and ease of conversion.

Datapro said, however, that prospective buyers shouldn't use the survey to draw final conclusions about highly rated or low-scoring systems, but rather should use the report as a buyer's guide to the market.

Acquisition Patterns

In addition to spotlighting user ratings, the report contains a number of other small business computer tidbits that shed light on the minicomputer arena. For instance, while a majority of DEC and DG computer users purchase their machines, IBM and NCR Corp. users usually rent their mainframes.

Also, while third-party leasing may be widely practiced by users of "heavyweight" large systems, it is used very little in the minicomputer field. In fact, only 13% of those users surveyed acquired their equipment through third-party leasing channels,

(Continued on Page 65)

Huge Conglomerate Puts Eggs In Different Mini Baskets

Special to CW

MILWAUKEE — Telling a multimillion dollar company not to put all its eggs in one basket may seem like some very unbusiness-like advice. However, a capital goods manufacturer here has successfully applied Mark Twain's maxim to its DP operations.

Medalist Industries, Inc. is a $100 million-plus conglomerate here that makes automated machinery for the furniture, metalworking and graphic arts industries. The firm, which has 22 divisions, also manufactures castings and fabricated parts for heavy construction, agriculture and machine tool concerns and has its corporate hand in auxiliary engines for sailboats, sports equipment and other consumer leisure products.

Since each of Medalist's divisions operates as an autonomous profit center, the company decided some time ago to incorporate a lot of NCR Corp. minicomputers into its DP operations rather than have all the branches rely on a central computer facility.

"Basically, distributive processing puts the increased data processing demands on the shoulders of the individual divisions rather than on the central computer division," according to Tom Bartz, Medalist's director of management systems. "Instead of beefing up the central computer to handle all of the work, we are giving certain divisions minicomputer capabilities so they can take over a lot of the work themselves."

Division of Labor

In the Medalist version of distributive processing, the divisions are given the computer power to do all of the routine functions of order taking, cash distibution, inventory analysis and similar timely reporting of sales, manufacturing, and daily operations.

The central computer division in Oshkosh, Wisc., maintains the large history files from which high-volume monthly and annual re-

(Continued on Page 65)

Using a CRT on-line to an NCR Corp. 8250 minicomputer, a Medalist Industries programmer tests a new program at the company's Oshkosh DP center.

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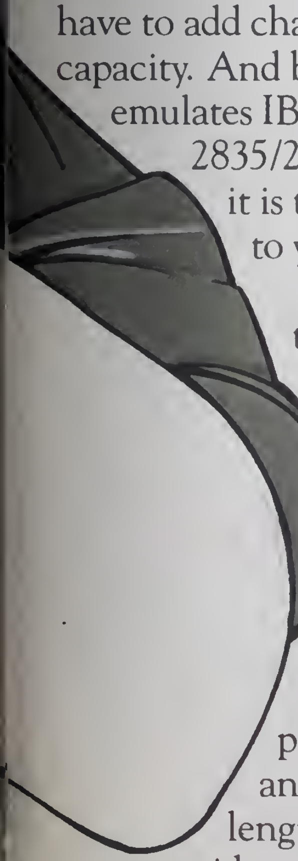

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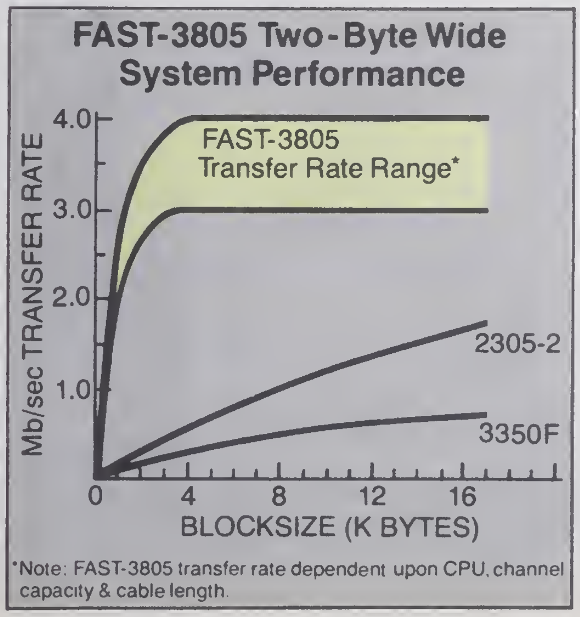

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Medalist Industries Puts Eggs in Many Baskets

(Continued from Page 61)

porting can be done, both for the individual divisions and on the corporate level. Some daily consolidated reporting is done for divisions selling to the same customers, Bartz said.

Medalist's computer center operates with an NCR Corp. Model 151 system geared for remote, batch and on-line DP chores. The 192K-byte processor is supported by NCR-657 disk storage units with capacities of up to 300 million bytes.

There are also two NCR-8250 minicomputers in the shop. One of the 8250s has remote CRT units that use transmission lines to Medalist's manufacturing divisions in Oshkosh and Milwaukee, while the other is used internally for developing, testing and writing new computer programs.

A similar unit, the NCR-8230 minicomputer, is being used at a Medalist division in Portage, Wisc., The division is the first to be worked into the distributive processing program, which started operating early in 1976.

The NCR-8230 processes orders and invoices and does some production ordering and customer service work. It works entirely independently of the computer center, sending all of its historic file data to Oshkosh by courier, Bartz commented.

Enlarging Scope

Based upon the success of the Portage operation, Medalist went on to enlarge the scope of its distributive processing system, setting up an NCR-8250 minicomputer system in its Gladiator plant in Leesburg, Fla. Gladiator manufatures football helmets and protective gear used in professional football as well as gear used in college and high school athletic programs.

An outgrowth of the Portage computer operation, the Florida installation has been added to and enhanced to meet the Gladiator requirements. It is the first of the athletic equipment divisions to make use of the system, and unlike Protage, it is transmitting its data directly to the computer center in Oshkosh.

Consolidates Reports

The central computer adds the data to the data received from other divisions in the athletic equipment markets to produce consolidated reports for use by all divisions selling athletic equipment to the same customers. These reports relate the customer's up-to-the-minute credit status, covering his credit limit, the amount outstanding and the number of outstanding orders on file, Bartz pointed out.

The same kind of system is now being developed for the Sand-Knit division in Berlin, Wisc., which has a much more complex order system. Sand-Knit manufacturers athlectic uniforms that are available in a wide variety of colors, styles and combinations. All this must be added to the normal editing developed for the other divisions.

The Pride Division in Fond du Lac, Wisc., also a manufacturer of athletic uniforms, will be going on-line this year, Bartz observed. Here, the objective is to create a data base they can use and the credit department can also tap into. This would, in effect, form the file of common data that all divisions in the athletic group could use, giving each division access to immediate information on the others' activities.

"Because each division operates autonomously, it is necessary to bring a common data base together for their individual use. This is especially true with the athletic group, since many of their sales are to common customers," Bartz said.

At present, Bartz explained, only Florida is transmitting directly to the NCR Century-151 in Oshkosh. While the other divisions are tied together only through the batching system of the central computer, the system is set up so that they will, in time, all be transmitting directly into the central computer. The divisions' individual computer systems can also be enlarged, altered and made more sophisticated as required.

Prime, Modcomp Get High Marks

(Continued from Page 61)

the report showed.

The report also showed that many minicomputer users obtain software, technical support and peripheral equipment from sources other than the vendor from which the mainframe was purchased.

Finally, the Datapro report noted that a considerable number of users — some 79% — wrote their own programs for their machines. Only 11% of the companies polled used computer programs written by the vendor's personnel, and 18% incorporated "ready-made" manufacturer-supplied programs into their business DP operations.

The percentages tallied in the survey total more than 100% because many of the respondents called upon two or more sources to author their programs, Datapro pointed out.

The complete research report is available in either of two Datapro feature reports, "All About Small Business Computers" or "All About Minicomputers." Both reports contain charts detailing more than 250 systems, and both are priced at $15 each from the firm at 1805 Underwood Blvd., Delran, N.J. A catalog of feature reports is also available free from the company.

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Electronics Company Goes On-Line With CRTs

Special to CW

CANOGA PARK, Calif. — In Hollywood, it generally takes a phone booth and a sizable dose of wide-screen wizardry to create a super hero. However, this isn't the case in data processing, according to a mild-mannered DP manager here at the Nucleonic Products Co. (NPC).

"We found ourselves drowning in paper," Jerry Rice recalled. "Our reports were getting longer and longer, and as one-person jobs became two- or three-person jobs, we needed two or three additional copies of each report."

Basically a distributor of diodes, capacitors, transistors and other electronic products, as well as a manufacturer of power supplies, NPS was no stranger to sophisticated machinery.

But when the firm wanted to upgrade its IBM System/3 Model 10, it decided against a total changeover to a System/34 and opted to add a Memorex Corp. Super-3 on-line CRT package to the present system, Rice explained.

The equipment addition not only allowed the company to leap the increasing mountain of reports in a single bound, but also permitted management to keep the System/3, which it owned.

Viable Alternative

"Our intent was to reduce the transaction effort and the reporting requirement by making information available on a more timely basis," the DP head stated. The Super-3 package "was the only viable alternative" and "the only practical way to go on-line with our existing mainframe hardware."

Representatives from the Business Systems Division of Memorex installed the system back in January. In fact, NPS was one of the first installations completed by the vendor since the system's introduction late last year.

The initial installation consisted of six CRTs: one in the computer room, one in the accounting department, one in the warehouse, one in the purchasing department and two in order processing, Rice said.

Personnel in each area now have immediate access to a wide range of data including accounts payable, accounts receivable, inventory, production control, purchase orders and vendor information. The Super-3 package is being used for file update as well as file inquiry.

"We have not yet begun using the system's data entry capability, because the users aren't completely conversant with the system yet," Rice explained. "We may use it for data entry later on, but meanwhile, we are confining it to those items that are self-verifiable."

After only a few months in operation, NPS is more than satisfied with the Super-3 package, the DP director pointed out.

As for the mountain of paperwork, the Super-3 package has virtually turned it into a molehill.

"We'll continue to print reports, but we've discontinued the use of the expensive five-part paper, which was costing us $50 to $60 a night," Rice noted. "We're now using one-part paper, which is about a 10th of the cost of the five-part forms."

While it's too early to pinpoint the exact dollar savings, the Memorex package has also cut costs in the keypunch area. "We're eliminating one whole keypunch machine," Rice reported.

In addition, the system called for a minimum of time spent retraining IBM-oriented users. "The transition from a card system to an on-line system is usually very difficult for users," Rice observed.

"However, the Super-3 package has given us the opportunity to get used to an on-line system gradually, without being fully dependent on it right away."

Furthermore, the nature of the upgrade made it unnecessary to "retrain" the equipment. "Since it uses an average of only 10K to 12K of memory, it required no modifications to the mainframe hardware to run the added terminals," Rice said.

However, there is a silver-lined cloud in NPS' otherwise blue-skyed system. "Because the Super-3 package software is so powerful, it brought out shortcomings in our own data.

"While it was troubling at first, it was a discovery we were happy to make because it gave us an opportunity to upgrade our data and make the whole DP operation more efficient," Rice observed.

'They're Kinda Cute Once You Get Used to Them.'

Show to Spotlight Minis, Small Systems

NEWTON, Mass. — Scores of micro, mini and small business computer systems as well as peripherals and software will highlight the Northeast Personal and Business Computer Show to be held in Boston Sept. 28-30.

Sponsored by the Jane Badgers and Co., the three-day extravaganza will feature displays by many of the major computer vendors and will include demonstrations of computer art, graphics and animation, computer-synthesized music and other applications, a spokesman stated.

The show will also involve a series of "tech talks" designed to acquaint the executive with computers and introduce the DP professional to new computer concepts.

Word processing, office automation, business software and information systems will also be covered in the show, the spokesman noted.

Registration for the exhibition, including the briefing sessions, is $5. Additional information is available from Jane Badgers and Co., 75 McCarthy Road, Newton, Mass. 02159.

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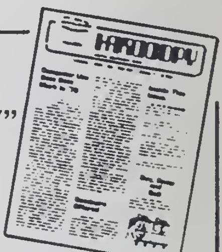

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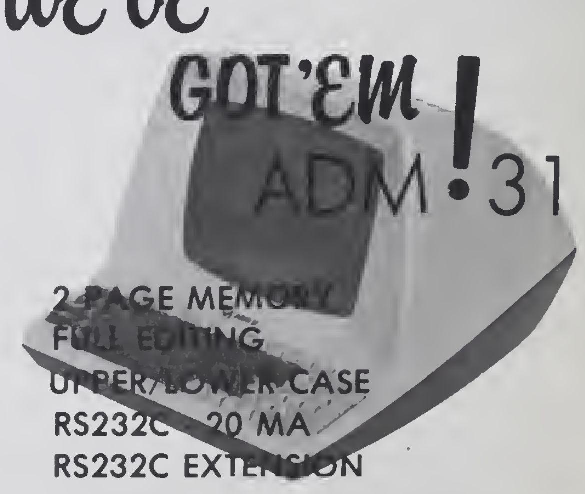


Ends Struggle With Keypunch Gear

Micro Betters Service Firm's Accuracy

By Ann Dooley
CW Staff

DETROIT — A service bureau here, struggling with outdated keypunch and paper tape equipment, recently turned to a microcomputer system for increased accuracy and greater ease of use in its operations — and got more than it bargained for.

The microcomputer system has provided more benefits than expected, according to Rick Graves, DP manager of Gilson Ayres, a business machine wholesaler that rents equipment such as adding machines and typewriters to commercial users.

Gilson Ayres had been using keypunch machines in conjunction with its NCR Corp. Century batch processing equipment for its own data input, as well as for nearly 60 outside accounts. But the firm realized this method was rapidly becoming outdated.

"We always had an input bottleneck with the old system," Graves commented, noting keypunchers were too inaccurate and took too long to train. In addition, operators were hard to find and had trouble with the many different input formats with which they were confronted.

Special Requirements

The firm decided it needed something that would increase accuracy and that nontechnical, relatively untrained people could use to input data and so began looking at microcomputers.

Because the firm's NCR equipment would only read key-to-tape, the firm had very specific requirements for new equipment. Gilson Ayres decided to acquire machinery from a local firm, Unique Business Systems, Inc., which promised it could interface paper tape punches to micro-based systems while providing a great deal of flexibility.

Graves selected Unique Business Systems in part because he thought he could avoid service problems by working with a local firm and in part because he had dealt with the firm before. According to the DP manager, he has not regretted the decision.

The system was installed four months ago and has caused almost no problems, Graves continued. The conversion was so smooth that the NCR equipment didn't even know it had stopped receiving data from the paper tape and was now receiving it from a microcomputer. The smooth conversion was possible because the system could duplicate all of the old keypunch cards and paper tape formats.

The Gilson Ayres system includes two microcomputers. "We needed two because otherwise, we could have been hard pressed to input both our own and our service bureau data at the same time," Graves said. One micro can be used as a backup system, although the need has not really arisen so far.

Off-the-Shelf Components

The system hardware was compiled by Unique Business Systems and consists mainly of off-the-shelf components. The system includes a CRT with a 12-in. screen, a cursor control, an alphanumeric keyboard and a 14-key numeric pad and a Z80 microprocessor with 32K bytes of memory, a minifloppy disk drive and three serial and three parallel I/O ports.

(Continued on Page 70)

Compas Microsystems Offers Minifloppy Disk System

AMES, Iowa — Daim, a minifloppy disk system for the Rockwell International, Inc. AIM 65 consisting of a floppy disk controller, power supply and one or two floppy disk drives, is being offered by Compas Microsystems, Inc.

The Daim controller board was designed to be used with the Rockwell expansion motherboard, which features the System 65 bus standard, the firm said.

All disk operating system software resides in erasable programmable read-only memory (Eprom) chips mounted on the Daim controller board. The disk operating system provides all the features of the System 65 operating system, according to Compas. Disks written on a Daim system may be used on a System 65 and the other way around, the firm claimed.

Disk functions include the capability to load and save source and object files, initialize a disk, zero a disk directory, list a file, list a disk directory, rename files, delete and recover fields and compress a disk to recover unused space. All commands are the same as those used on the System 65. The Daim power supply provides all the necessary power requirements for two disk drives and the Daim controller board.

The base price of $850 includes the Daim controller board (with the operating system in Eprom), a power supply and one packaged disk drive. The cost of an additional drive is $350.

Compas Microsystems is located at 224 S.E. 16 St., Ames, Iowa 50010.

TRS-80 Gains Text Editor

BOYNTON BEACH, Fla. — A text editor, an inventory control system and a rent control system for the Radio Shack TRS-80 system were unveiled by the Computer Bugs, a Florida-based systems group.

The inventory control system requires a 48K-byte system with two disk drives and sells for $95. It will handle up to 1,200 12-char. alphanumeric part numbers on a single minidisk.

Parts may be added in any sequence, but the reports will print them out in sequence without sorting. Stored data includes descriptions, prices, reorder points and reorder quantities.

The system features personalized report of sales and supplier receipts headings and flags out-of-stock and reorder items. In addition, quick data entry is possible with the system.

The rent control system also requires a 48K-byte system with two disk drives and costs $250. Of interest are the reports of overdue tenants, which include optional late charges, detailed summaries and totals of rents collected and complete billing statement generation.

The text editor requires a 32K-byte system and one disk drive and costs $29. It was designed to turn the TRS-80 into a word processor. A 15-line by 50-col section of the document being edited is always visible.

Computer Bugs can be reached through P.O. Box 789, Boynton Beach, Fla. 33425.

Z80-, DEC LSI-Based

Heath Unveils Two Systems

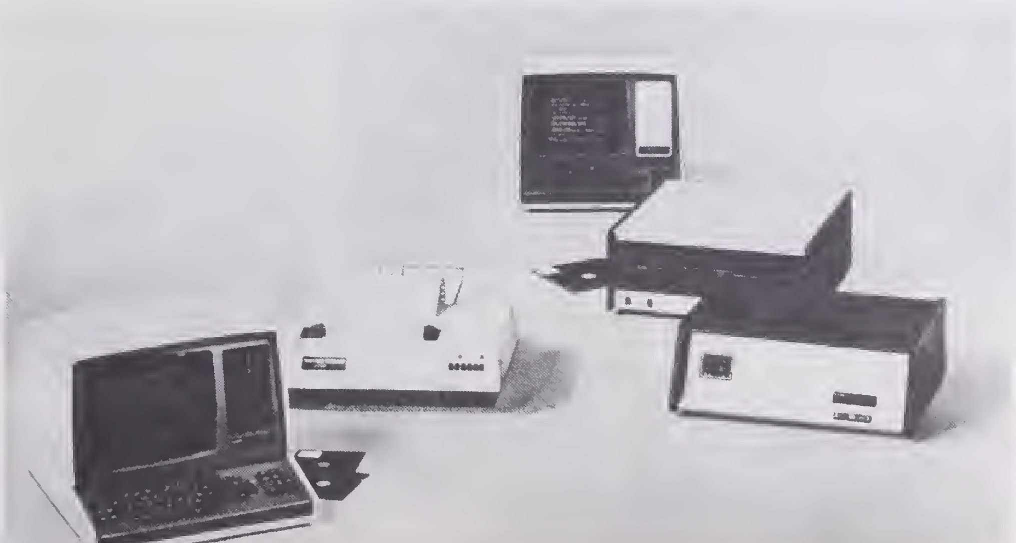
ST. JOSEPH, Mich. — Spurred by its recent acquisition by Zenith Radio Corp., Heath Co. has launched two microprocessor-based computer systems.

The first system, the WH89, is billed as a complete system and incorporates two Z80 microprocessors with 16K bytes of expandable random-access memory (RAM). The system also has a 5-1/4-in. floppy desk drive, a two-port serial I/O accessory, built-in memory diagnostics and an intelligent CRT terminal, a spokesman said.

The system's terminal is Z80-controlled and has a 25 character by 80 character display format along with a commercial typewriter-style keyboard. All of the terminal's functions are controlled by keyboard or software, and direct cursor addressing is said to permit editing and correcting at any location on the CRT screen.

The terminal is VT52- and Ansistandard-compatible, features eight user-definable keys and includes a numeric keypad in calculator format for entering arithmetic programs.

(Continued on Page 70)



Heath WH89 and WH11A

Service Bureau Improves Accuracy With Micro

(Continued from Page 69)

Dataio, an interpretive language similar to Basic developed by Unique Business Systems, is used by the service bureau.

"It's really a lot better than Basic," Graves said. The language makes it simple to input formats on the machine, and the disk I/O is more automatic than Basic's because it decides when and where the data is to be transferred for storage. In most cases, the Dataio input is fed directly to the NCR equipment.

The system performs data input for applications such as payroll, inventory and sales. It covers the whole range of general business applications and includes a few specialized ones such as a maintenance contract application that indicates when rental equipment should be checked, Graves noted.

Improvement Noticeable

The service bureau work performed by Gilson Ayres for its outside accounts varies from straight accounting jobs to broader customized financial accounting packages. Many of the accounts have noticed the improvements that have taken place since the microcomputer began operation, Graves stated.

But no one has noticed the improvements as much as the people here. According to the DP manager, switching to a microcomputer input system has sped throughput and has improved accuracy. It has greatly improved editing capabilities and has helped significantly in the training process.

Previously, it took three months before an operator could work independently. Now, it takes only weeks. The system's prompting routines guide the operator through each procedure. Graves said that, in a short time, the system will pay for itself through savings on operator training time alone.

Graves, who expects to upgrade the aging NCR equipment within the next year or so, stated that whatever the upgrade, it will have to accept the microcomputer's input. "What we want to do is simply unplug the old system and put the microcomputers right into the new one."

MPU-Based Systems Debut

(Continued from Page 69)

The WH89 is EIA RS-232C communications-oriented and costs $2,295.

The second system, the WH11A, is a 16-bit computer that uses Digital Equipment Corp. LSI-11/2 technology, including the KD11-HA MPU board. The unit is PDP-11/03-compatible with up to 64K bytes of memory and comes with a power supply and a backplane that accommodates seven additional accessory cards, the spokesman claimed.

Capable of running all applications written for the PDP-11/03, the WH11A's disk operating system supports Basic, Fortran and Assembler.

By itself, the computer costs $1,895.

As options to the WH11A, H/S Data Systems is offering the WH19 intelligent terminal — the same one packaged in the WH89 system — for $995 and the WH27 floppy disk system. The WH27 has a Z80-based controller and two 8-in. drives with a combined storage capacity of 512K bytes. The unit uses standard IBM 3740 diskettes and is DEC RX01-compatible.

The drive costs $2,595. Additional details can be obtained from the company at Hilltop Road St. Joseph, Mich. 49085.

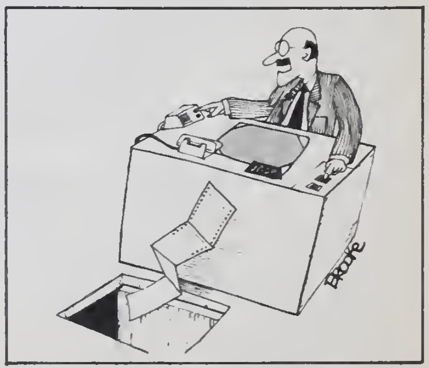
Apple II Linked To Peripherals

REDONDO BEACH, Calif. — A device that plugs directly into Apple Computer, Inc. Apple II microcomputers to provide permanent memory intelligence for "dumb" peripheral devices has been introduced by Micrographics, Inc.

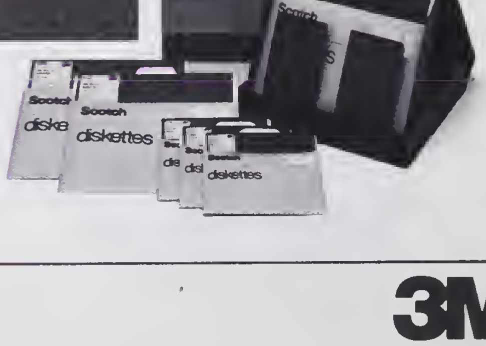
Called the Interface Brain, the device supplies permanent full-time availability of firmware drivers for the Centronics Data Communications Corp. 779, PR-40 and Okidata Corp. printers as well as the Microproducts erasable programmable read-only memory (Eprom) programmer as soon as the system is turned on.

The Interface Brain is supplied on an Eprom set in a Microproducts Eprom adapter socket to permit direct insertion into the D8 read-only Memory (ROM) slot on the Apple II. The necessary documentation is also supplied.

The Apple II Interface Brain is available for $59.95 from computer retail stores or from the firm at 2107 Artesia Blvd., Redondo Beach, Calif. 90278.



'Miss Pierce, Send in the Next Analyst for Project Review.'



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Alpha Micro Users Get Hospital Billing System

TORRANCE, Calif. — A real-time, fully interactive, multi-user hospital billing system is being offered to users of Alpha Microsystems, Inc. equipment by Demarco-Shatz Corp., an in-house medical billing systems firm.

Called the Separate Hospital Billing System (SHBS), the software is menu-driven and was specifically designed for radiology, pathology and emergency room billings in hospitals or offices.

Patient Accounts

SHBS features patient accounts with guarantors, multiple third-party insurance carriers and complete, detailed statement and insurance form preparation. The system holds complete patient billing histories, including charges, adjustments and receipts, the firm said.

Receipts and adjustments can be allocated by department. Data can include adjustments and receipts with past month, month-to-date, and year-to-date figures; complete insurance form preparation; and automatic "suspend" and "billing" features, according to Demarco-Shatz.

Two Versions

The SHBS is available as a stand-alone applications software package for Alpha Microsystems users or as a complete hardware/software turnkey computer system, the firm noted.

The complete system includes the 16-bit Alpha Microsystems CPU, 64K core memory, a 10M-byte disk drive, a 1,920 char. CRT with numeric keypad, a 160 line/-min line printer, an equipment cabinet, disk cartridges, a modem, installation training manuals and a one-year software warranty.

The system is modular and can be expanded to meet growth requirements, according to the firm.

Prices start at $7,500 for the stand-alone software package and begin at $29,500 for the turnkey system. For more information, contact Demarco-Shatz at 312 Maple Ave., Torrance, Calif. 90503.

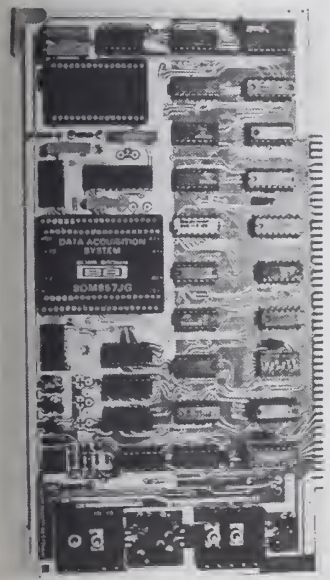
Z80 Gets Converter

NEWBURY PARK, Calif. — A 16-channel, single-ended analog-to-digital (a/d) converter for Z80 and 8080 microprocessors was recently announced by California Data Corp.

The eight-channel differential converter is the third in a series of S-100 bus-compatible analog I/O devices.

Plug-in Converter

It features 12-bit accuracy and a plug-in hybrid converter, according to California Data.



California Data's Converter

The unit's four operational modes include status test, CPU suspension, 8080 priority interrupt and three Z80 interrupt modes.

California Data also offers an instrumentation amplifier and a programmable gain amplifier as options, the vendor said.

The basic converter costs $575, the instrument amplifier costs $50 and the programmable gain amplifier costs $175, California Data said from Suite C-10, 3475 Old Conejo Road, Newbury Park, Calif. 91320.

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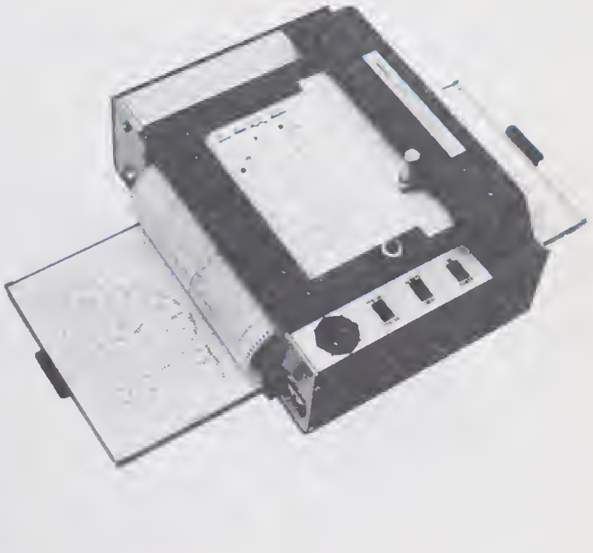

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Sumitomo's sudden growth — from $900 million to $1.3 billion in a single year — has caused us to upgrade our EDP system. We are moving from an NCR Century 300 to two NCR V-8580's. And moving smoothly despite the pressure of increasing volume.

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Yasuhiko Okiyama (left) is Vice President and Manager, Sumitomo Bank of California, San Francisco, the 92nd largest bank in the U.S. Bob Sullivan is an NCR district manager.

SULLIVAN:
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We have seen a 15.4 percent improvement in the handling of online transactions due entirely to the new generation hardware. And we know there will be another impressive jump in efficiency when VRX takes over the online operations. Under VRX, error recovery takes just seconds. With the old system, we needed a full minute.

SULLIVAN:
VRX offers full dynamic resource allocation and virtual memory with no rigid memory partitioning. You can run up to 35 jobs simultaneously. And Sumitomo will soon be using Online Program Development (OLPD), a feature of VRX that multiplies the effectiveness of a programming group.

OKIYAMA:
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Zilog, Intel Micros Get Emulator

DEXTER, Mich. — A universal bisynchronous emulator for Intel Corp. and Zilog, Inc. microcomputers running under CP/M is being offered by Winterhalter and Associates.

Designated the Remote Batch Terminal Emulator (RBTE), the unit emulates most bisynchronous terminals including the IBM 2780, 2770, 3741 and 3780 terminals, the firm said. All are supported by dynamic configuration of the RBTE. Each supported terminal has a configuration file containing 13 configuration parameters.

The RBTE also includes a diagnostic port feature that displays the bisynchronous framing characters on a local CRT, allowing the user to diagnose communication problems without line analyzers, the firm claimed.

The RBTE reads disk records from a CP/M file, reformats them into a bisynchronous block and transmits them to a remote terminal, the firm said. Alternatively, a bisynchronous block can be received from the remote terminal, unpacked into disk records and written to the specified CP/M file.

Another product, the Bisynch Communication Driver, allows an application program to directly communicate to the bisynchronous communication ports with simple open, close, read, write, connect and disconnect commands. It has the same features as the RBTE but requires that the user pack or unpack the bisynchronous block.

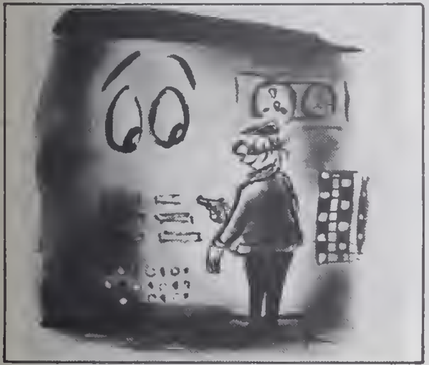
The RBTE and the Bisynch Communication Driver are available for $500 each with a license from the firm at 3825 N. Zeeb Road, Dexter, Mich. 48130.

Micro Works Offers Digitizer

DEL MAR, Calif. — The Micro Works Digisector, a random-access video digitizer from The Micro Works, is being offered to users for precision security systems, moving target indicators and computer portraiture. The DS-80 Digitsector provides high-resolution graphics and 64 levels of grey scale and has a conversion time of 4 msec per pixel. It also uses a one-bus slot in any S-100 system.

The computer sends the Digisector two 8-bit addresses, and the Digisector returns the digitized brightness of the image at the specified location. For set-up and monitoring purposes, the Digisector produces output comprised of the camera's video signal plus a superimposed cursor showing exactly where the DS-80 is looking, the firm said.

The Digisector comes fully assembled and costs $349.95. The Micro Works can be reached through P.O. Box 1110, Del Mar, Calif. 92014.



Ford Using Micros In Carburetors

SANTA CLARA, Calif. — Intel Corp. is supplying 8048 single-chip microcomputers to Ford Motor Co. for use in new feedback carburetor systems designed for certain model 1980 cars.

The system is designed to minimize exhaust emissions, consistent with good fuel economy. The microcomputer control unit (MCU) was designed by Ford's Electrical and Electronics Division (EED). MCU modules are being supplied by Ford EED and by Motorola Automotive Products Division. Intel is supplying the 8048 microcomputers to both module suppliers.

Intel Corp. is at 3065 Bowers Ave., Santa Clara, Calif. 95051.

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Claims 'Due Diligence' Not Observed

Lloyd's Denies Charges in Lessor's Suit

By Marguerite Zientara
CW Staff

BALTIMORE — Lloyd's of London has denied responsibility for $27 million in unpaid insurance claims for early lease terminations on IBM computer equipment in its response to the $627 million lawsuit filed against it in June by Federal Leasing, Inc. [CW, July 9].

The response, filed two weeks ago in U.S. District Court here, included a counterclaim demanding $10 million (plus interest and costs) from Federal Leasing for what Lloyd's alleged were overpayments according to the terms of the contract. That figure is slightly less than the amount Lloyd's has paid to Federal Leasing since the insurance claims started coming in.

From 1974 to 1977, Lloyd's and 17 other British insurance firms underwrote the "J" policies, as they are known, to insure third-party lessors against losses that could be incurred if customers canceled seven-year leases before their full term [CW, April 23].

Federal Leasing's suit claimed that customers terminated 21 leases for IBM 370 CPUs and peripherals after IBM introduced its 30 series in 1977, offering higher performance at lower cost.

Lloyd's response claimed that Federal Leasing failed to exercise "due diligence" to avoid or diminish losses resulting from lease cancellations and is therefore not entitled to any monetary award. Exercising due diligence means lessors must act as if they were not insured in attempting to remarket their equipment, one source noted.

March Agreement Unenforceable?

Much of Lloyd's response dealt with what is known as the March Agreement — entered into by the two parties in March 1978 — which Lloyd's declared unenforceable.

The March Agreement set the procedures to be followed for adjustments and payments of early termination claims by customers. In addition to citing a lack of "due diligence" in complying with the terms of the March Agreement, Lloyd's response claimed the agreement itself was "entered into under a mutual mistake of fact and law."

According to Federal Leasing Secretary/-Treasurer Bill Evans, however, the March Agreement was negotiated by Lloyd's general counsel in a negotiation session with the brokers and a representative of the lead underwriter.

The document was then sent to all the underwriters for approval, which it got, according to Evans, "and now [Lloyd's is] claiming it doesn't exist," he said.

In its response, Lloyd's further claimed it does not have to pay any claims until " 'ascertained net loss' has been fully sustained and can be accurately calculated with finality." Lloyd's also said Federal Leasing failed to provide it with "notice, information and documentation of reported claims" in such a way that Lloyd's could ascertain whether the claims should be paid.

In demanding the $10 million, Lloyd's claimed that Federal Leasing, "in order to induce [Lloyd's] to provide insurance coverage . . . misrepresented or omitted . . . certain facts [concerning] . . . the particular risks involved."

According to Evans, however, "There was no misrepresentation at all, as a matter of fact; the policy existed, we applied for it and we got it."

In addition to requesting a jury trial, Lloyd's has filed an Interpleader Action in the case, asking that the 21 separate investors named in Federal Leasing's suit be brought in as defendants. That action is an apparent attempt to prevent the filing of additional suits against Lloyd's directly by any of those investors.

So far, no other similar suits have been filed against Lloyd's.

CI Notes

Merger Announcements Rise by 22% for 1979

CHICAGO — Merger announcements in the computer manufacturing and services industry rose 22% during the first half of 1979, when 45 announcements were made, compared with 37 in the same period last year.

On the whole, merger activity in the computer industry far exceeded the volume of activity in any of the 40 other categories studied by merger specialists W.T. Grimm & Co. Overall merger announcements only increased 1% from last year, Grimm noted.

Running counter to overall results, stock was the favored means of payment in transactions between computer firms. For the total group studied, cash was the most widely used payment method.

In the 29 computer deals studied, 11 were for stock, nine for cash and nine for a combination of cash and stock or debt.

Publicly held companies accounted for 15 of the mergers.

Divisional or partial sales in the computer field accounted for 13 of the 45 transactions, a proportion similar to those in the other industries surveyed.

Electronics Execs Wages Up 8.6%

PALO ALTO, Calif. — Salaries of electronics executives are 8.6% higher than their base salaries a year ago, according to a recently completed American Electronics Association survey.

Last year's survey showed a 7.5% increase in the comparable period.

Moreover, salaries of chief executives are running 11% ahead of last year's reports. Senior manufacturing executives' base salaries are up 9.2% and chief financial officers, 8.5%, the survey found.

Executives in companies that pay bonuses continue to receive higher base pay in addition to supplemental pay. The trend toward bonus payments as a percentage of salary has continued steadily upward for the past four years, the survey indicated.

The executive compensation survey is based on salary data gathered from 3,900 electronics executives throughout the U.S. Data from this year's sample included more than one half of AEA's total membership.

ADR Lands $283,000 Contract With Mercedes Manufacturer

By Connie Winkler
CW Staff

PRINCETON, N. J. — ADR International Corp. has just landed a $283,000 contract for two of its software products with Daimler-Benz, the German-based Mercedes auto manufacturer. The contract includes Daimler's 11 computer sites in Germany and South America.

The contract for 10 Roscoe and 11 Librarian packages — the largest ever for ADR International — will go a long way toward boosting the start-up of the new European group. ADR-Europe was formed in May after Applied Data Research, Inc. (ADR) purchased five European software marketing companies that had been marketing ADR products.

About a dozen marketing officials of the reorganized subsidiary met here recently at an international marketing conference. Patrick R. Capone, president of ADR International, said the new group would provide three things: better service to the 4,000 international installations, the level of support customers expect, and a closer relationship between ADR and its subsidiaries.

ADR has been making "excellent progress" internationally, Capone said, noting the company is now trying to shepherd two product sales to Russia and Bulgaria through the U.S. Department of Commerce for approval.

Selling 'European Way'

Under the new ADR International organization, Austria, Germany, Switzerland, Belgium, the Netherlands and the countries of the Mid-East will report first to ADR Europe and second to ADR International. All the other country organizations report directly to ADR International in Princeton.

"You sell to Europe the European way — Europeans selling to Europeans. ADR has given us the opportunity to do it the European way, and that has been successful," according to Adrian C. de Graaf, new general manager of ADR Europe.

ADR Europe also operates in the shadow of IBM, and it is uncertain at this point what the effect of the IBM 4300 will be. "We have to compete with IBM, but we also live for the fact of IBM," de Graaf said. He noted that IBM is developing and testing more products in Europe.

Language Difficulties

De Graaf said it is difficult to market and provide software documentation in countries where three different languages might be spoken. That's why ADR has chosen to

(Continued on Page 78)

Lessors Terminate Merger Agreement

CHICAGO — The definitive merger agreement between Forsythe McArthur Associates, Inc. and Boothe Financial Corp. was terminated June 1 by mutual consent.

Explaining the collapse of the proposed merger, Richard Forsythe, president of Forsythe McArthur, reported that the board of directors at Boothe recently decided the company's assets would be best employed in investments outside of the IBM equipment area.

Forsythe McArthur specializes in leasing and selling IBM equipment and currently has approximately $30 million worth of equipment out on lease, Forsythe said.

Ironically, Boothe announced its intentions to merge with Forsythe McArthur at about the same time it disclosed it would be making minimal future investments in its computer portfolio [CW, March 5].

Following its strategy to avoid excessive investment in computer equipment, Boothe is currently negotiating to merge with IDS Realty Trust of Minneapolis.

Telex Offers OEMs Triple-Density Drive

TULSA, Okla. — Telex Computer Products has introduced a triple-density magnetic tape drive and triple-density formatter/controller for seismic data processing and other OEM applications that require high performance data formatting.

The Model 6253 tape drive and Model 6850 formatter each provide 9-track, 800-, 1,600- and 6,250 bit/in. data formats, the firm said. The formatter can handle up to four of the tape drives, while an expansion option allows a maximum of eight to be attached.

With the tape drive, OEMs can combine 800 bit/in. NRZ1, 1,600 bit/in. PE and 6,250 bit/in. GCR formatting in a single system. Telex dual-density Model 6250 tape drives offering 1,600- and 6,250 bit/in. data formats can be upgraded in the field to provide triple-density operation, according to the firm.

Any of the three formats can be selected manually or automatically under program control. Users can specify tape speeds of 45-, 75- or 125 in./sec or select different operating densities by using an optional dual-speed capability.

A triple-density formatter and 125 in./sec single-speed triple-density drive are priced under $15,000 in OEM quantities. Initial deliveries are scheduled for December.

Telex is at 6422 E. 41 St., Tulsa, Okla. 74135.

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Sells Off Four Service Units

Itel Loses $60 Million in Quarter

SAN FRANCISCO — As expected, Itel Corp. posted a loss of $60.2 million, or $5.28 per share, for its second quarter ended June 30. Losses for the quarter include $9.5 million from discontinued operation. For the comparable quarter last year, Itel reported earnings of $9.4 million, or 78 cents per share.

Revenues for the quarter totaled $168.3 million, up from $125.7 million in the same quarter last year.

For its first six months, Itel sustained a net loss of $50.1 million, or $4.54 per share, including a $25.8 million loss from discontinued operations and a $16.8 million gain from the cumulative effect of a change in accounting principles. Last year Itel posted a net income of $16.8 million, or $1.39 per share, for its first six months.

Revenues for the six-month period were $347.5 million, a 48% increase from the $234.3 million reported for the first half of last year.

Itel's newly formed four-man office of the president said the firm would again report a loss for its third quarter as well as for the entire year. Management added that "we are currently unable to quantify the magnitude of the potential loss for 1979 or to predict when we will return to profitability."

Significant Interdependence

Commenting on the loss, Itel's management board said, "Our computer activities have generated a substantial part of our equity base for our transportation equipment addition. Thus, although these operations are different in scope, their financial interdependence is very significant."

IBM announcements and actions caused an important cash generator to become a cash user, the firm continued.

The impact of Itel's computer losses on the transportation segment of the company's business was seen recently when Itel was forced to cancel an order for $60 million worth of rail cars.

Moreover, the much-lower-than-anticipated profits rapidly diminished Itel's ability to obtain financing for its operations. "The financial structure of our company dictates a reliance upon lenders," management said.

Fortunately, Itel's banks and institutional lenders have waived certain financial covenants through Jan. 30, 1980. Itel's banks have also agreed to provide the company with an additional $67 million line of credit to meet near-term working capital needs.

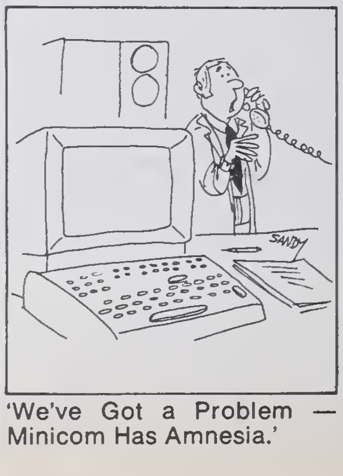
Streamlining Operations

To help streamline the firm's operating costs and thus reduce its debt requirement, Itel has not only ceased expansion of its assets but realigned its organization.

To date, the firm has reduced from five to three the number of operating divisions and consolidated eight other divisions. Layoffs at the company have reportedly exceeded 500 employees.

In other moves, Itel has agreed in principle to sell off four of its DP service units for a total of $41 million. Three of those service groups are slated to be sold to Computer Sciences Corp. for $19 million (see story below), and another unit, AuTex Services, is under agreement with Xerox Corp. for $22 million.

In addition, Itel has recently been sued by two shareholders in a federal court class action suit that charges the firm with fraud and misrepresentation of its financial conditions.



'We've Got a Problem — Minicom Has Amnesia.'

CSC Agrees to Buy Three Itel Service Units

EL SEGUNDO, Calif. — Computer Sciences Corp. (CSC) has agreed to purchase three of Itel's DP service units for $19 million in cash.

The units are Itel's Data Processing Division/Batch and Data Processing Division/On-Line, both headquartered in White Plains, N.Y., and the Professional Services Division in Los Angeles. The purchase is subject to the approvals of both firms' board of directors.

The move is "another step in our program to diversify our data services in the commercial market," according to CSC President and Chairman William R. Hoover.

For the fiscal year ended March 30, CSC's data services business contributed $92.5 million to the company's total revenues of $343.2 million. For the first quarter of the current fiscal year, data services accounted for $25.9 million of the total revenues of $100.7 million.

The Itel units under consideration employ nearly 800 people and provide payroll, accounting and related business DP services to more than 8,000 clients. The combined annual revenues for these units is about $36 million.

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Firms in UK Advised to Join U.S., Japanese

LONDON — UK computer firms should consider links with U.S. and Japanese computer companies to increase their competitive strength, according to a report recently released by the National Economic Development Office (Nedo) here.

The report, compiled by Nedo's multinationals subcommittee, stressed that Japanese computer makers are intent on battling IBM and other U.S. vendors for prominence in the world computer market.

This battle may prove to be the single most important factor in determining the structure of the international industry during the 1980s, the report concluded. "Casualties among [British] companies caught in the crosss fire of this battle could be considerable."

To avoid the casualty list, British firms should link with U.S. and other foreign computer firms, the report advocated. Even International Computers Ltd., the UK's largest computer vendor, is definitely considered by the committee a possible casualty, according to sources.

Ripe for Takeover

This report echoed the conclusion of a previous survey of the consumer electronics industry, which found that industry was ripe for takeover by the Japanese.

Although the report said the contribution of foreign multinationals to the UK's balance of payments was unknown, the consensus was that these firms would improve the deteriorating balance of payments deficits, which last year reportedly reached more than $400 million.

Moreover, the committee recommended that foreign multinationals receive selective assistance for new ventures, provided they agree to continue production in the UK for a specific period of time. In addition, these companies should be encouraged to increase local purchases of parts, subassemblies and services.

A Third of Workforce

These companies currently are said to account for one-third of the 44,000 people employed in manufacturing work in the computer industry. However, the report stated that because of technological advances, the number of employees may not increase substantially in the future.

In return, the committee advocated the government ensure that an adequate suply of trained personnel be made available to the computer industry.

National Semi To Expand

SANTA CLARA, Calif. — National Semiconductor Corp. has earmarked several million dollars for a project that, over a five-year period, would double the working space at its 75,000 sq-ft semiconductor production facility in Greenock, Scotland.

Funded in part by financial grants and incentives from the Scottish Economic Planning Department of the Scottish Office, the expanded plant will manufacture linear circuits plus a range of very large-scale integrated (VLSI) circuit components. Emphasis in this area will be on microprocessors and memory as well as custom circuit designs.

In addition, the firm is "seriously" considering 5-in. wafer fabrication, according to Dr. Robert Heikes, vice-president of the European and Latin American divisions, who added production machinery for the enlarged plant will soon be ordered.

Additional staff will be hired in phases over five years to bring the current workforce to more than several thousand employees.

Intel Merges Sales Forces

PHOENIX — Intel Corp. has merged the sales forces of its Commercial Systems Division and of MRI Systems Corp., its newly acquired software company.

Heading up the new operation is Stephen G. Maysonave, who was recently appointed director of sales.

The move was made to form a united sales force that can offer both hardware and software products to the end-user market, the firm noted.

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IBM Disk Drive Revenues Seen Seesawing

MOUNTAIN VIEW, Calif. — This year, for the first time, IBM's total disk drive revenues will fall below the combined total revenues of other U.S. captive drive manufacturers, according to the 1979 "Disk/Trend Report" on the worldwide moving-head rigid disk drive industry.

Through 1982, however, IBM's annual disk drive revenues will seesaw from 30% to 36% of the yearly worldwide total as the firm begins to shift its product mix, the report predicted.

For example, IBM is expected to replace its 3340 data module drives, 3350 and 3344 large fixed disk drives and "Gulliver" small fixed drives with a new product lineup to include the 3370; the as yet unannounced "Whitney" large fixed disk drives; and the eight-inch "Piccolo" small and midsize fixed drives.

These new products are likely to affect shipments by independent vendors of plug-compatible products, particularly the 3350-type drives currently enjoying a boom market. This slide in plug-compatible shipments should rebound by mid-1981, when the independents match IBM's technology, the report forecast.

Overall, worldwide total revenues to manufacturers of moving-head rigid disk drives are expected to jump to $6.3 billion by 1982 from last year's $3.4 billion total.

During that time, fixed disk drives in the 30M-byte to 200M-byte range will lead all other types of moving-head drives in growth, averaging 64.3% annual increases, according to the report. Other fast-paced markets include high-capacity disk cartridge drives, growing at 47.4% per year, and fixed drives with less than 30M bytes, showing 26% yearly growth.

Fixed disk drives as a whole should cull a 66% share of worldwide revenues for moving-head rigid disk drives by 1982, up from 41.5% last year.

OEM Disk Drives

Turning to OEM disk drives, disk cartridge drives with less than 12M bytes of storage continue to capture the lion's share or 33.5%, of 1979 revenues, closely followed by storage module drives with a 21.8% share.

By 1982, storage module drives will still be among the OEM leaders, but because of the dynamic growth of eigth-inch drives, high-capacity disk cartridge drives and small- to medium-capacity fixed disk drives will also experience a surge.

With a leading edge this year, small-capacity disk cartridge drives will start to sag in growth to account for less than 9% of worldwide OEM revenues in 1982.

The 1979 "Disk/Trend Report" costs $825 from publisher James N. Porter, an electronics industry management consultant, at 1224 Arbor Court, Mountain View, Calif. 94040.

Individual sections of the report on rigid and flexible disk drives can be purchased separately for $550 and $385, respectively.

Auto Maker Inks Pact With ADR

(Continued from Page 75)

open its new technical support center in Zurich, Switzerland, where all three languages are spoken, de Graaf said.

European marketing also differs from U.S. marketing because representatives sell to the systems programmer level instead of to the DP manager, as is done in the U.S.

Approximately 1,000 ADR Europe product sites — out of a potential 3,550 sites — use plug-compatible IBM 370/115 and larger systems under OS or DOS operating systems.

Currently, ADR Europe has 30 employees and plans to hire 19 more by the end of 1980, although finding employees is difficult because Europeans don't change jobs as frequently as Americans do, de Graaf said. ADR Europe is also planning its own development center and printing and tape creation centers.

Beginning Sept. 1, ADR International will market Empire, a financial modeling package from the U.S.

Supershorts

To meet growing demand for T-Bar, Inc.'s 3000 series computer switching systems, the firm set up a European sales organization based in Slough, England. T-Bar has signed salesmen and distributors in England, Belgium, Holland and Germany and will continue to sell communications control and swithcing equipment through Racal-Milgo. That company has been its distributor in Europe, the Middle East and Africa since 1974.

— — —

American Management Systems, Inc. (AMS) acquired the major assets of Computerized Publications, Inc. (CPI), including CPI's PI/ONE software, which will be incorporated into AMS' computer services.

— — —

Applicon, Inc., a manufacturer of computer-aided design and manufacturing (CAD/CAM) systems, opened new Northern European headquarters in Stockport, England to provide demonstrations, training and field service testing and repairs for customers in the UK, Ireland and Scandinavia.

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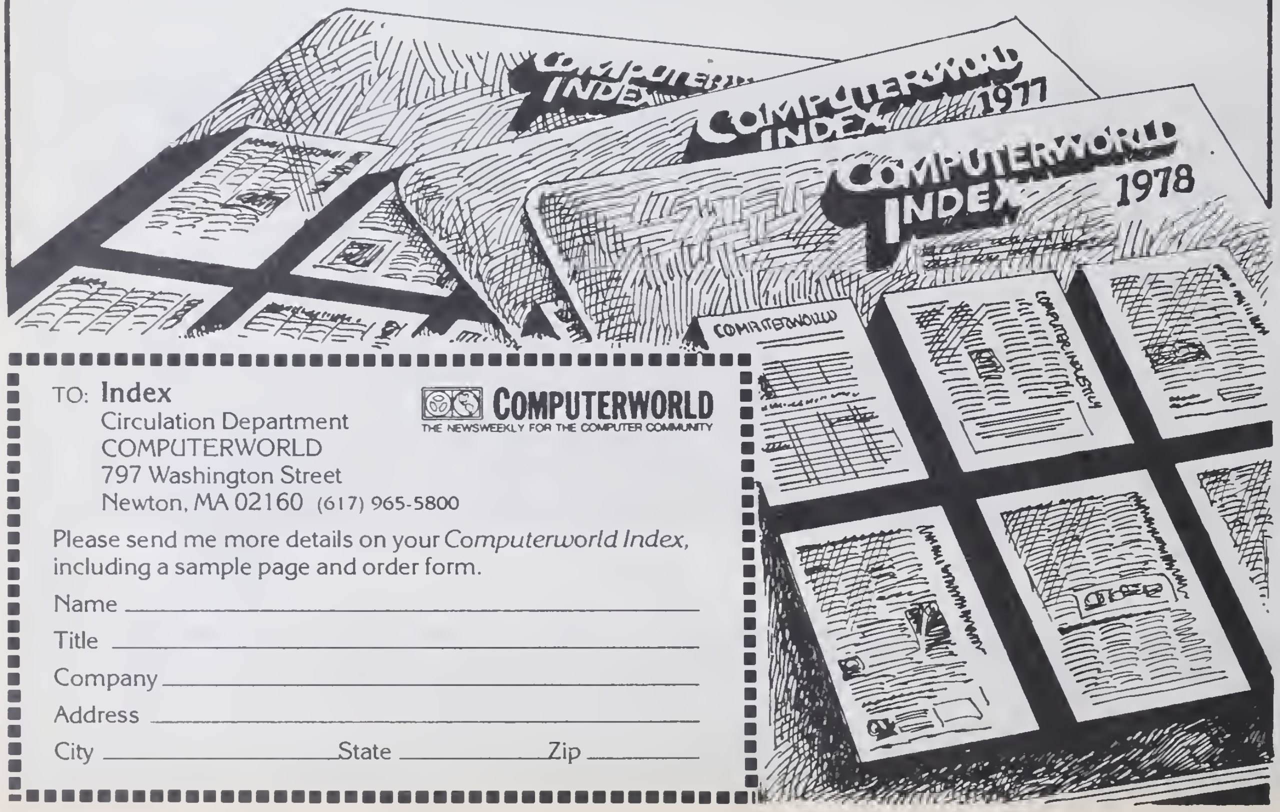

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DEC Taps Consultant To Overhaul Recruiting

By Alan B. Glou
Special to CW

In the early 1960s, Digital Equipment Corp. assigned my organization, Alan Glou Associates, the mission of finding and recruiting top-drawer personnel.

After discussions with DEC's top management and with company personnel, we developed a procedure for finding candidates for specific assignments, conducting complete preliminary interviews as a screening technique and introducing the screened candidates to the firm's personnel director.

Each year, when the Institute of Electrical and Electronics Engineers (IEEE) technical and trade show was held, I would take a suite in a hotel nearby where a direct line was set up between the hotel and DEC's personnel director at company headquarters in Maynard, Mass.

After locating a qualified candidate at the IEEE show and completing a preliminary interview, an appointment was made for an immediate interview at the company.

This procedure enabled us to locate an attract a number of very able people to DEC.

In those days, I spent three days a week at DEC, which allowed me to tour the organization and acquaint myself with managers and their needs. Such continuous association with division and department managers provided insight into the firm's inadequate interview style, usually the Achilles' heel in the executive process.

Too few managers have the time to pay enough attention to the demands of the interview, because interviewing is an extra duty added to an arduous workload that carries higher priority. As a result, candidates tune out and the interview ends unsuccessfully.

DEC's philosophy then, and now, has been to hire eager and aggressive people, work them hard and frequently reward them with promotions. While a positive approach, this policy posed special problems in recruiting, particularly in the case of engineers and manufacturing specialists.

Because managers were relatively inexperienced, they were handicapped as recruiters and interviewers. To overcome this difficulty, we proposed conducting workshops to teach DEC personnel how to find key people to fit the company mold — and how to keep them.

We started with a single division within the firm and concentrated on how to effectively locate and interview. Management asked me to develop and conduct the first workshop.

Outlining Techniques

At the workshop, we brought on-line managers together with on-line personnel recruiters to form a role-playing group. Both sides were instructed in the art of interviewing, with emphasis on the following aspects:

- The importance of warm reception for each candidate, starting with the secretary or receptionist who welcomes the applicant.
- Listening as an essential ingredient of successful interviewing. What do you really hear? What is the candidate doing when he speaks? Watch his hands. Listen for facts. Take brief notes. Repeat to the applicant what you have heard said as part of your evaluation.
- The need to ask specific questions. These should cover the principal job function of each previous position; the toughest work problem and how it was handled; the most outstanding accomplishment; the most interesting position; work strengths and weaknesses; short and long-term objectives.

That these techniques can make a difference in the recruitment process was illustrated when I sat in on a first interview with the lead candidate for the position of DEC division manager of manufacturing.

The applicant was then working in a competing firm and content with his position, but expressed an interest in talking to DEC about the industry.

After discussing the job requirements with senior management, it was found that the successful applicant would need experience in high-volume components manufacturing. But just as important, he would have to be "hard-nosed," because the position entailed working under fierce pressure from within the division itself and from two closely related departments, each headed by a young, ambitious and highly competitive individual.

The vice-president took most of the first 60 minutes to describe the problems of the division and the potential risks to whomever took the position. Several times the candidate appeared ready to speak, but was not given the opportunity to do so.

A subsequent break gave me the opportunity to convey to the vice-president my concern that the applicant was being turned off. I advised him to give the candidate a chance to reveal himself, to try to solve the problems raised and, in short, to let him talk while we listened.

Before we resumed, I took the candidate aside to ask his reaction. His response was that he was bored, and rather than hear any more of the problems, he wanted to discuss how they could be solved.

When we regrouped, the vice-president took a different tack. "Just yesterday," he said, "we came up with a situation that is typical of what this position faces. What would you do in such a case?" he asked.

The interview picked up pace perceptibly at that point and, within two weeks, concluded with a successful placement.

After our first workshop, actual interviews improved markedly. We video-taped the session and distributed an edited version throughout the division.

Workshop sessions frequently revealed that qualified candidates for one position actually may have been better suited for another. One reason is that "chemistry" is more important than product or industry knowledge.

The candidate's ability to fit into the existing corporate organization represents 60% of the reason for hiring him. Knowledge and experience make up the rest.

Glou is president of Alan Glou Associates, an executive search consulting firm in Needham, Mass.

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- Interactive Processing
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- High-Level, Block-Structured Software
- Operating Systems
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  — Development of fifth generation multiprocessor large GP systems with virtual memory capability
  — Low level executive system initialization, system recovery, file management, software diagnostics/debug
- Compiler Design
  — Develop interactive symbolic debugging systems
- Telecommunications Systems
- Tools Support

SOFTWARE QUALITY ASSURANCE

- Develop/Execute test for Software Evaluation
- Audit Software Development

FIRMWARE DEVELOPMENT

- Design machine emulators and virtual machine interpreters
- System design of multiprocessor distributor logic systems
- Design/Implement Distributed Processing Systems using VLSI technology
- Systems Performance Measurement

TESTWARE DEVELOPMENT

- Design diagnostic test programs
- Interface with H/W, F/W, S/W Designers

INTEGRATION TEST—SOFTWARE/FIRMWARE/TESTWARE

- Develop and execute integration and test plans
- Specification review/analysis and liaison with developers
- Monitor and evaluate test results

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- COBOL, On-Line Business Programming

For prompt attention, send confidential resume and salary history to: Mr. George Rice, Manager, Professional Placement, Engineering and Manufacturing, Dept. B50, NCR Corporation, 16550 W. Bernardo Drive, San Diego, CA 92127.

SYSTEMS ENGINEERING

NCR Systems Engineering/ Scripps Ranch

Here you'll be doing pioneering work in our newest System Operation. You will be designing and implementing advanced systems software for an entire new generation of interactive, transaction-oriented, distributed processing systems for the 80's.

We're working with the latest VLSI's, micros, minis, largest NCR mainframes, and newest concepts in data communications, distributed networking, and PASCAL-based languages. Moreover, we're creating corporate Data Base programs of the broadest scope and diversity.

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Firmware Systems Analyst/Programmer

You'll be part of a small group implementing virtual machines on the I-8400, I-8500, and I-9000 families. These virtual machines emulate a block structured, stack oriented architecture and COBOL run time environment. Preferred experience: Firmware development, assembly language programming, I/O, and block structured languages or COBOL.

Systems Analyst/Programmer

You will be part of a small group designing and implementing advanced system software for the I-8400 family and future mainframes. These systems will support interactive multiprogramming environment with virtual memory capability. Programs are written entirely in high-level, Pascal-based language. We seek experience in, or exposure to operating systems development, compiler construction, tools development, and high-level, block-structured software.

Configuration Management/Systems Analyst

You will be part of a small select group responsible for the integration of software, firmware, and testware. Systems to be tested are I-8400 Family which has interactive, multiprogramming, and virtual memory capabilities. Duties include functional specification review, test bed development, monitoring and evaluation of test results, and coordination with software developers and marketing. Preferred experience: cobol, microcode, assembly or high level block-structured languages. Background in firmware, testware, or applications programming plus ability to communicate effectively.

Data Base Architect

You will play a leading technical role in the design, and implementation of Data Base Management Systems including Data Dictionary Facilities Query/Update Languages, DDL Compiler, Data Manipulation Languages and Data Base Utilities. This will include defining architectural requirements for an advanced distributed data base system. We seek a minimum of 5 years experience in data management systems software design with familiarity of both network and relational data base architecture.

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You will maintain a Magnuson M80/3 computer system operating CICS and ETCS and will instruct IBM Assembler programming in various systems courses. Applicants must be experienced in IBM OS/VS systems and be fluent Assembler Programmers. Some instructional experience required.

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Develop advanced digital control equipment, especially microprocessor based control, using latest signal electronics components and associated circuitry. Lead laboratory evaluation of breadboard and prototype hardware. Includes software as required, as well as all documentation associated with final design. Requires BS/MSEE.

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Develop software systems for others to apply to real-time industrial process control of heavy machinery. Will involve system conception, system design and diagnostic testing, systems architecture, and hardware/software trade-off. Requires BS/MSEE or Computer Science with an engineering orientation.

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Requires 2-4 years of COBOL and ASSEMBLER programming experience, knowledge of Burroughs or IBM SYSGEN, and experience with data base and data communications handlers.

PROGRAMMER/ANALYST

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Process Computer Software Engineers should have a BS in engineering, math, physical science or computer sciences, with 3 to 5 years' experience in real-time process control or SCADA projects. FORTRAN experience is desirable.

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Boston Area

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The successful candidate will be involved in most areas of the systems programming function including generation and maintenance of the operating system, tuning, teleprocessing, and hardware/software planning and support.

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Manager of Academic Services: The Department of Computer Services at Cleveland State University is looking for a Manager of Academic Services who will be responsible for participating in the development of long range plans; developing new applications and systems and maintaining and improving existing ones; and hiring, training, directing, and reviewing performance of personnel. Minimum qualifications include an undergraduate degree plus Master's coursework, and three years related work experience in the computer science field. Preferred qualifications include a Master's degree plus two years related work experience with educational hardware and software. Applicants should send resume with salary history to: Ronald L. Moore, Director, Computer Services, Cleveland State University, 1983 E. 24th St., Cleveland, OH 44115.

CSU

Computer

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You will be responsible for analyzing, designing, implementing and documenting business applications relating to city/county government. If interested in giving your career new challenge and opportunity for growth, please send your resume to: Personnel Department,

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— OREGON —

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This position requires from 3-5 years experience in manufacturing systems design and a background in project management and control. Familiarity with IMS DB/DC and minicomputers would be a plus.

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These positions require 2-3 years experience in production control and warehousing systems design. Ideal candidates will have supervised one or more team members in a project leader role and will be familiar with IMS DB/DC and minicomputers.

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CBS

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A Quality Assurance Manager and several Quality Assurance Engineers are being sought to staff the Distributed Systems Quality Assurance Group. This group is responsible for: ensuring that the necessary quality related plans and policies exist and are implemented for the Distributed Systems Program; assisting in the monitoring and assessing of product quality on a continuing basis; and establishing necessary action programs to ensure the maintenance of high quality levels for all products.

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A Senior Quality Engineer is needed to design and implement an automated test system for the Forms Management System, which runs under VAX/VMS, and also to maintain existing test systems for FMS on RSX-11M and RT-11. The qualified individual should be capable of designing and implementing extensions to these test systems for version 2 of FMS.

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digital

PROGRAMMER/ANALYST

Teledyne Continental Motors General Products Division, a leading manufacturer in Western Michigan, presently has a need for a qualified Programmer/Analyst to join its Data Processing team.

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HONEYWELL INFORMATION SYSTEMS
17515 West Nine Mile Road, (PPS)
Dept. Southfield, MI. 48075

LOS ANGELES
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Heavy equipment dealer in central Wyoming is seeking an individual with 3-4 years RPG II programming and 1-2 years CCP experience. Previous experience with IBM S/3 15D preferred. Excellent salary and benefits included. Send resume including salary history and requirements to Ron Williams, Wyoming Machinery Co., P.O. Box 2335, Casper, Wyoming 82601 or phone (307) 265-1000. E.O.E.

SYSTEMS/PROCEDURES

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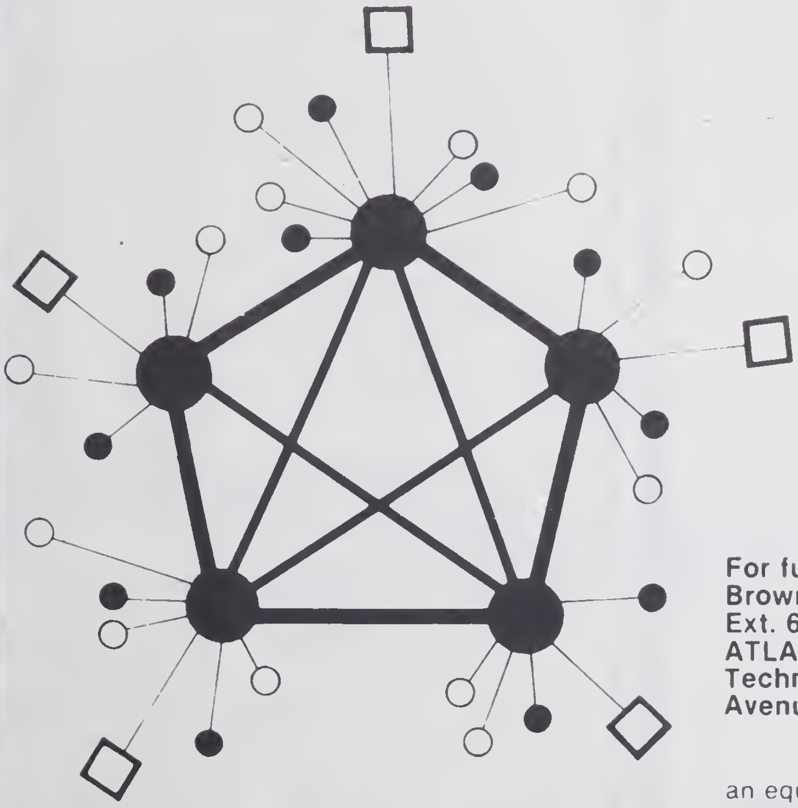

SOFTWARE ENGINEERS will be responsible for analysis, specification, design, development, test and maintenance of software involving man-machine interaction, communications processors, data base management, billing, switch maintenance and traffic data analysis. Requirements include several years experience in real-time software system development: assembly, PL-1, PASCAL,RSX-11 programming capabilities and BS/MS in Engineering or Computer Science. Experience in telephony, simulation, process control or related applications is desirable.

For further information call Fred B. Brown collect at (617) 890-9200 Ext. 621 or send a resume to him at: ATLANTIC OPERATION, Sylvania Technical Systems, Inc., 100 First Avenue, Waltham, MA 02154.

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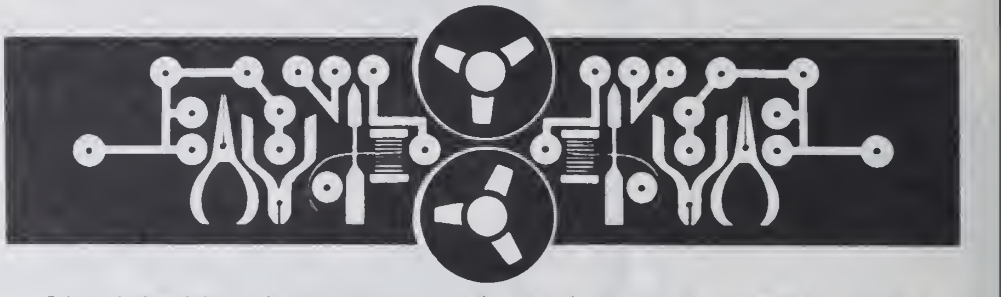

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The School Board of Broward County, Florida

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Effective Date of Vacancies: Immediately

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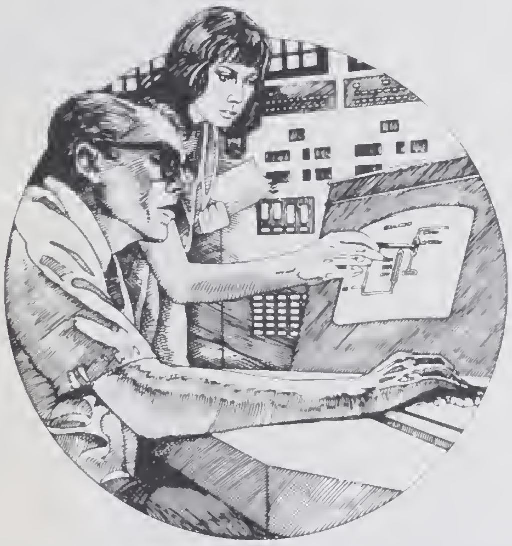

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CCI offers	fast personal growth in a young, fast-track company; exciting exposure to telecommunications; competitive benefits, including free medical, dental, vision, and life insurance; and excellent starting salaries. Call 800-421-1178, toll free, for more information. Ask for V. Ingram or P. Vaz-Vieira.

Qualified candidates send resume and salary history to:

Computer Communications, Inc.
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Salary range $14,910 — $22,370 plus liberal employee benefits. Starting salary dependent upon experience and qualifications. Interested persons should **submit resume** by **September 21** to: **George Bosela, Director Systems Development/-Programming, Oberlin College, Computing Center, Oberling, Ohio, 44074.** Position to be filled by November 1, 1979.

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SUPPORT PROGRAMS
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Preferred backgrounds will include a B.S. degree in Engineering, Mathematics, Physics, or Computer Science and 2-5 years of hands-on related experience, with at least one year of FORTRAN in a scientific programming environment. Electric power experience in supervisory control, data acquisition, or automatic generation control is an asset, as is a knowledge of ASSEMBLY.

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Starting salary negotiable between $26,000 and $29,000, based on experience. Excellent benefits.

Submit resume by Sept. 14, 1979 to:

Minnesota School Districts
Data Processing Joint Board (TIES)
1925 W. County Road B2
St. Paul, MN 55113

ATTN: Janet A. Pendergrass
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Mail your resume and salary requirement to:

Hal. L. Banks, Jr.
Supervisor of Recruiting

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Management of computer center operations. BA degree in data processing or business administration required; five years experience in data processing and systems analysis; knowledge of Digital PDP 11/70 under RSTS/E and Basic Plus desired.

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This position offers excellent compensation and benefits. For confidential consideration, call, or send your resume and salary history to:

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Earnest Ashford
Manager of Technical Staffing
9901 South Wilcrest
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Wordstream

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We offer an excellent compensation package, including a salary commensurate with experience and ability, and above all, the chance to grow along with us. For consideration, please submit your resume, including salary history, to:

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SYSOREX
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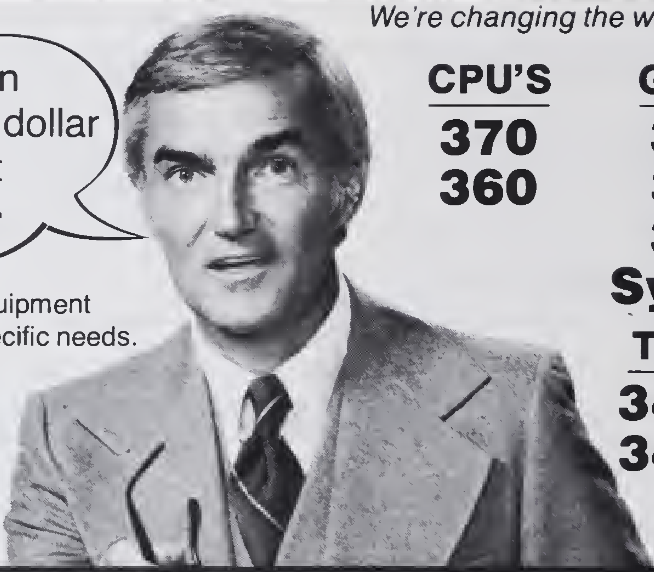

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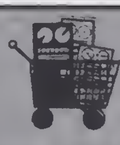

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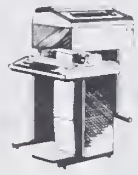

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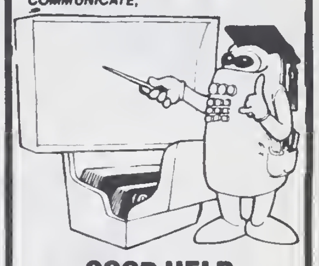

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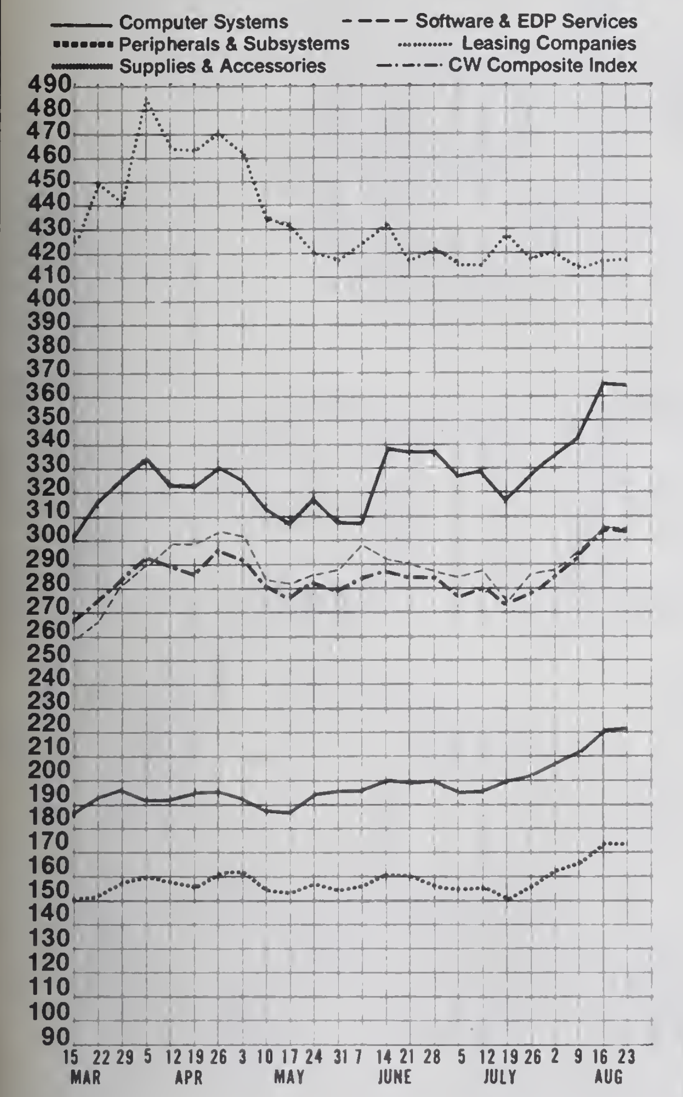

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Eernings	1,243,000	628,000

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Revenue	3,703,000	4,348,000
Tax Cred	...	e156,000
Earnings	69,000	336,000
6 Mo Shr	.06	.37
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Eernings	115,000	677,000

a-Tex-loss carryforward.

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Three Months Ended June 30

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Three Months Ended June 30

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aTax Cred	259,000	168,000
Eernings	635,000	349,000
6 Mo Shr	.46	.18
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Eernings	1,191,000	457,000

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TRADE QUOTES

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, AUGUST 22, 1979

All statistics compiled, computed and formatted by
TRADE QUOTES, INC.
Cambridge, Mass. 02139

COMPUTER SYSTEMS

EXCH		PRICE			
		1978-79 RANGE (1)	CLOSE AUG 22 1979	WEEK NET CHNGE	WEEK PCT CHNGE
A	AMDAHL CORP	23- 69	24 5/8	- 3/8	-1.5
N	BURROUGHS CORP	59- 87	73 1/8	-1 5/8	-2.1
O	COMPUTER AUTOMATION	11- 44	13	+ 1/4	+1.9
N	CONTROL DATA CORP	23- 48	47 3/8	- 7/8	-1.8
O	CRAY RESEARCH INC	8- 39	34	-2	-5.5
N	DATA GENERAL CORP	42- 74	73 1/4	- 1/4	-0.3
N	DATAPOINT CORP	34- 88	88 1/4	+2 1/2	+2.9
N	DIGITAL EQUIPMENT	39- 65	64 1/8	+ 3/8	+0.5
N	ELECTRONIC ASSOC.	2- 13	7 5/8	- 1/8	-1.6
A	ELECTRONIC ENGINEER.	9- 19	13 1/2	0	0.0
N	FOUR-PHASE SYSTEMS	19- 46	38 1/8	+ 1/2	+1.3
N	FOXBORO	28- 44	41 1/4	-1 1/2	-3.5
O	GENERAL AUTOMATION	7- 26	14	- 3/4	-5.0
O	GRI COMPUTER CORP	1- 3	1 1/8	0	0.0
N	HEWLETT-PACKARD CO	24- 57	56 1/8	+1 3/8	+2.5
N	HONEYWELL INC	43- 82	81 1/2	+1 1/2	+1.8
N	IBM	69-321	70 1/2	-1 3/4	-2.4
O	MANAGEMENT ASSIST	9- 29	20 5/8	- 1/2	-2.3
O	MANUFACTURING DATA S	9- 31	29 3/8	-1	-3.2
O	MICRODATA CORP	10- 31	31	+ 1/2	+1.6
O	MINI-COMPUTER SYST	4- 8	4 1/2	+ 3/4	+20.0
O	MODULAR COMPUTER SYS	7- 18	12 1/2	- 1/8	-0.9
N	NCR	37- 80	78 3/4	-1 1/4	-1.5
N	PRIME COMPUTER INC	9- 22	18 3/4	- 1/2	-2.5
N	PERKIN-ELMER	17- 34	30 3/8	0	0.0
N	SPERRY RAND	33- 52	51	- 3/4	-1.4
A	SYSTEMS ENG. LABS	11- 24	13 1/4	-1 5/8	-10.9
O	TANDEM COMPUTERS INC	13- 37	33 3/4	+1 1/4	+3.8
A	WANG LABS.	6- 25	24 1/4	+ 1/8	+0.5

LEASING COMPANIES

EXCH		1978-79 RANGE (1)	CLOSE AUG 22 1979	WEEK NET CHNGE	WEEK PCT CHNGE
O	BOOTHE COURIER CORP	13- 21	18	+ 1/4	+1.4
O	COMDISCO INC	3- 21	15	+ 1/2	+3.4
A	COMMERCE GROUP CORP	1- 1	5/8	0	0.0
A	COMPUTER INVSTRS GRP	1- 7	3 3/8	- 1/4	-6.8
O	CONTINENTAL INFO SYS	4- 15	3 3/4	+ 1/4	+7.1
M	DATRONIC RENTAL	1- 4	2 7/8	+ 1/2	+21.0
A	DCL INC	3- 5	5 1/4	0	0.0
N	DPF INC	8- 14	10 3/4	+ 1/2	+4.8
N	ITEL	9- 36	9 1/8	0	0.0
N	LEASCO CORP	24- 50	49 1/2	+1	+2.0
O	LEASPAC CORP	1- 4	1/2	- 1/4	-33.3
A	PIONEER TEX CORP	3- 7	3 1/8	0	0.0
N	U.S. LEASING	13- 20	16 3/4	+ 3/8	+2.2

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

SOFTWARE & EDP SERVICES

EXCH		PRICE			
		1978-79 RANGE (1)	CLOSE AUG 22 1979	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	1- 2	1 3/8	0	0.0
O	ANACOMP INC	8- 22	16 3/4	- 1/4	-1.4
A	APPLIED DATA RES.	8- 17	10 1/4	+ 3/8	+3.7
N	AUTOMATIC DATA PROC	24- 37	36 3/8	+ 1/2	+1.3
O	COMPU-SERV NETWORK	5- 16	13	0	0.0
O	COMPUTER HORIZONS	1- 9	3 1/4	- 1/4	-7.1
O	COMPUTER NETWORK	5- 16	6 3/4	-1 1/2	-18.1
N	COMPUTER SCIENCES	8- 17	16 7/8	- 1/2	-2.8
O	COMPUTER TASK GROUP	1- 7	6 3/4	0	0.0
O	COMPUTER USAGE	2- 4	2 1/8	0	0.0
O	COMPUT AUTO REP SVC	4- 10	6 7/8	- 1/8	-1.7
O	COMSHARE	6- 26	16 1/2	- 1/4	-1.4
O	CULLINANE CORP	14- 33	23 1/4	-1 1/2	-6.0
O	DATA DIMENSIONS INC	2- 9	2 5/8	0	0.0
O	DATATAB	1- 4	2 3/8	0	0.0
N	ELECTRONIC DATA SYS.	15- 28	27 3/4	+3 3/4	+15.6
O	INSYTE CORP	1- 3	1 1/2	0	0.0
O	IPS COMPUTER MARKET.	2- 3	3	0	0.0
O	KEANE ASSOCIATES	3- 6	4 7/8	+ 1/8	+2.6
O	KEYDATA CORP	1- 4	3 7/8	+ 1/8	+3.3
A	LOGICON	10- 19	15 7/8	+ 1/8	+0.7
O	NATIONAL DATA CORP	7- 16	15 1/4	- 3/8	-2.3
A	ON LINE SYSTEMS INC	12- 30	25	+1 1/4	+5.2
N	PLANNING RESEARCH	4- 10	7	+ 1/4	+3.7
O	PROGRAMMING & SYS	1- 1	1 1/8	0	0.0
O	RAPIDATA INC	3- 7	5 1/4	- 1/8	-2.3
O	REYNOLDS & REYNOLD	18- 36	28 1/2	0	0.0
O	SCIENTIFIC COMPUTERS	3- 9	7 1/4	+ 1/8	+1.7
N	TYMSHARE INC	18- 43	42	-1	-2.3
A	URS SYSTEMS	5- 8	6 5/8	+ 5/8	+10.4
N	WYLY CORP	1- 7	6 1/4	+ 1/4	+4.1

PERIPHERALS & SUBSYSTEMS

EXCH		1978-79 RANGE (1)	CLOSE AUG 22 1979	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADDRESSOGRAPH-MULT	13- 32	17 1/2	- 7/8	-4.7
N	AMPEX CORP	10- 19	17 5/8	-1 1/8	-6.0
O	ANDERSON JACOBSON	5- 11	11 3/8	+1	+9.6
N	APPLIED DIG DATA SYS	8- 22	9 7/8	+1 3/4	+21.5
O	BEEHIVE INT'L	3- 7	5 1/4	+ 1/4	+5.0
A	BOLT,BERANEK & NEW	6- 15	14 5/8	+ 3/4	+5.4
N	BUNKER-RAMO	10- 29	25 1/8	- 3/8	-1.4
A	CALCOMP	3- 13	12 1/2	- 1/8	-0.9
O	CAMBRIDGE MEMORIES	2- 3	2 1/2	+ 1/8	+5.2
N	CENTRONICS DATA COMP	16- 52	49 5/8	- 1/4	-0.5
O	COGNITRONICS	1- 4	2 3/4	+ 1/2	+22.2
O	COMPUTER COMMUN.	6- 12	9 1/8	- 1/8	-1.3
O	COMPUTER CONSOLES	4- 16	14 1/2	+ 3/4	+5.4
A	COMPUTER EQUIPMENT	3- 6	5	+ 1/8	+2.5
O	COMPUTER TRANSCEIVER	1- 5	3 7/8	- 3/8	-8.8
O	COMPUTERVISION CORP	5- 35	33 7/8	+ 1/8	+0.3
N	CONRAC CORP	13- 26	17 5/8	- 3/4	-4.0

EXCH		PRICE			
		1978-79 RANGE (1)	CLOSE AUG 22 1979	WEEK NET CHNGE	WEEK PCT CHNGE
A	DATA ACCESS SYSTEMS	0- 10	9 3/8	0	0.0
A	DATA PRODUCTS CORP	13- 25	18 1/8	+ 3/4	+4.3
O	DATUM INC	2- 6	2 1/2	- 3/8	-13.0
O	DECISION DATA COMPUT	2- 6	4 1/4	+ 1/4	+6.2
O	DELTA DATA SYSTEMS	1- 1	5/8	- 1/8	-16.6
A	DOCUMATION INC	6- 34	25 1/8	- 1/8	-0.4
O	DATARAM CORP	6- 32	21 1/2	+ 1/4	+1.1
N	ELECTRONIC M & M	3- 9	3 7/8	- 1/8	-3.1
O	FABRI-TEK	1- 2	3/4	+	+9.0
O	GENERAL COMPUTER SYS	1- 3	2 3/4	- 1/8	-4.3
O	GENERAL DATACOMM IND	9- 21	17 1/2	+ 1/2	+2.9
N	HAZELTINE CORP	10- 18	17	0	0.0
N	HARRIS CORP	17- 36	31 7/8	-1 3/8	-4.1
O	INFOREX INC	4- 11	3 7/8	- 5/8	-13.8
O	INFORMATION INTL INC	7- 12	8 3/4	- 1/4	-2.7
O	INFOTON	1- 3	2 3/4	- 1/4	-8.3
O	INTEL CORP	26- 57	55 3/4	-1	-1.7
O	INTERSIL	7- 18	16 1/2	- 1/2	-2.9
A	LUNDY ELECTRONICS	4- 8	6 7/8	- 1/8	-1.7
O	MSI DATA CORP	7- 19	8 3/4	0	0.0
N	MEMOREX	27- 59	29 7/8	- 5/8	-2.0
N	MOHAWK DATA SCI	6- 15	13 3/4	- 3/4	-5.1
O	OMEX	2- 8	6 1/2	0	0.0
O	PARADYNE CORP	9- 19	18 3/8	+ 1/4	+1.3
O	PENRIL CORP	5- 12	11 1/8	- 5/8	-5.3
N	PERTEC CORP	8- 17	12 1/2	+ 5/8	+5.2
A	POTTER INSTRUMENT	2- 2	1 3/4	0	0.0
O	RECOGNITION EQUIP	6- 13	6 3/4	- 1/4	-3.5
O	SCAN DATA	1- 5	1 7/8	- 1/4	-11.7
N	STORAGE TECHNOLOGY	15- 46	19 1/4	- 1/8	-0.6
O	T BAR INC	11- 22	20 1/2	+1 1/4	+6.4
O	TALLY CORP.	4- 14	12 3/4	0	0.0
A	TEC INC	6- 13	8 1/4	+ 1/4	+3.1
N	TEKTRONIX INC	33- 59	57 5/8	-1	-1.7
N	TELEX	3- 9	4 5/8	- 3/8	-7.5
O	TESDATA SYSTEMS CP	9- 26	10	0	0.0
O	WILTEK INC	1- 2	1/2	- 1/8	-20.0

SUPPLIES & ACCESSORIES

EXCH		1978-79 RANGE (1)	CLOSE AUG 22 1979	WEEK NET CHNGE	WEEK PCT CHNGE
A	AMERICAN BUS PRODS	6- 12	11 1/8	+ 7/8	+8.5
O	BALTIMORE BUS FORMS	1- 4	3/4	0	0.0
N	BARRY WRIGHT	14- 34	19 3/8	+ 3/8	+1.9
O	CYBERMATICS INC	1- 1	3/4	- 1/8	-14.2
O	DUPLEX PRODUCTS INC	13- 30	26 3/8	+ 1/8	+0.4
N	ENNIS BUS. FORMS	5- 21	20 1/4	- 3/8	-1.8
N	3M COMPANY	43- 66	57 1/4	- 3/8	-0.6
O	MOORE CORP LTD	26- 34	33 1/2	+1 1/2	+4.6
N	NASHUA CORP	18- 37	31 1/8	+1 7/8	+6.4
O	STANDARD REGISTER	20- 29	28 1/4	0	0.0
A	TAB PRODUCTS CO	8- 17	17	+1 1/4	+7.9
A	WABASH MAGNETICS	10- 22	16 3/8	- 1/2	-2.9
N	WALLACE BUS FORMS	18- 33	27	- 7/8	-3.1

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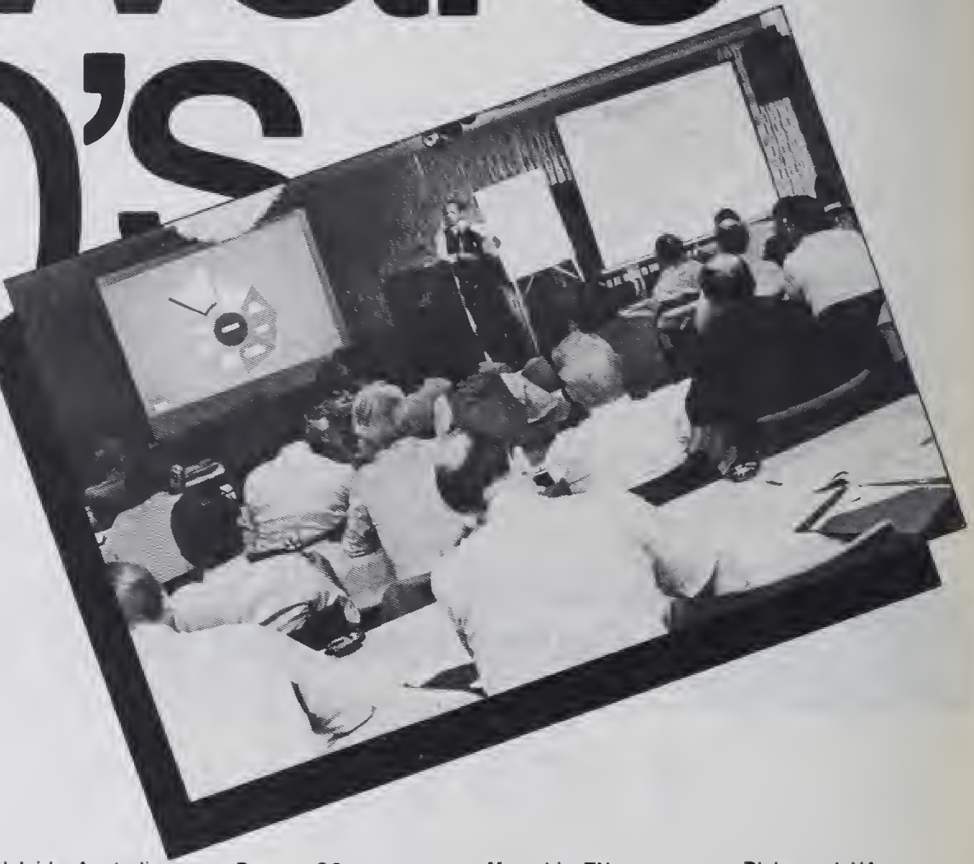

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